

# Electric Actuator



## High Rigidity and High Precision Slider Type

Battery-less Absolute (Step Motor 24 VDC)

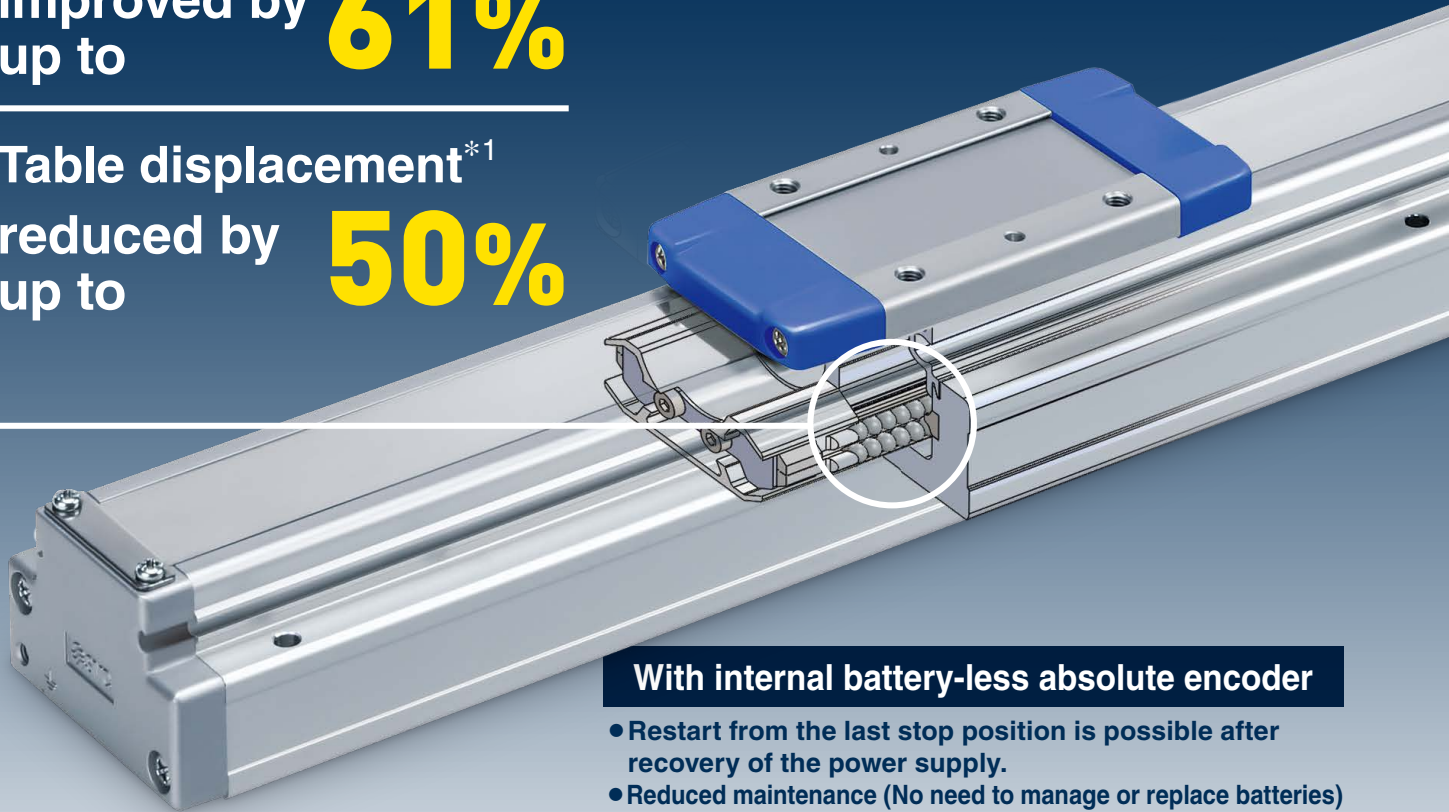
AC Servo Motor



# Circular arc grooves allow for high rigidity and high precision.

Moment resistance<sup>\*1 \*2</sup>  
improved by **61%**  
up to

Table displacement<sup>\*1</sup>  
reduced by **50%**  
up to



**With internal battery-less absolute encoder**

- Restart from the last stop position is possible after recovery of the power supply.
- Reduced maintenance (No need to manage or replace batteries)

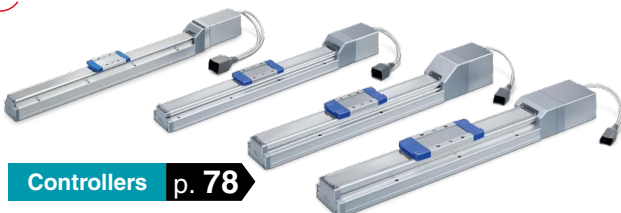
**Positioning repeatability:  $\pm 0.01$  mm<sup>\*3</sup>**

- \*1 Compared with the LEFS
- \*2 Size 40, Mep, Overhang: 300 mm
- \*3 Excludes the "H" lead type

Battery-less Absolute (Step Motor 24 VDC)

Size: 16, 25, 32, 40

**New Size 16 has been added.**



Controllers p. 78

**New** AC Servo Motor

Size: 25, 32, 40



Drivers p. 96

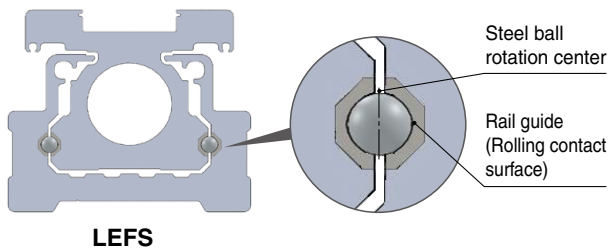
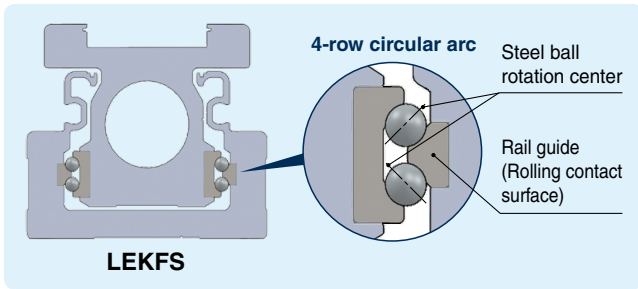
# LEKFS Series



CAT.ES100-144B

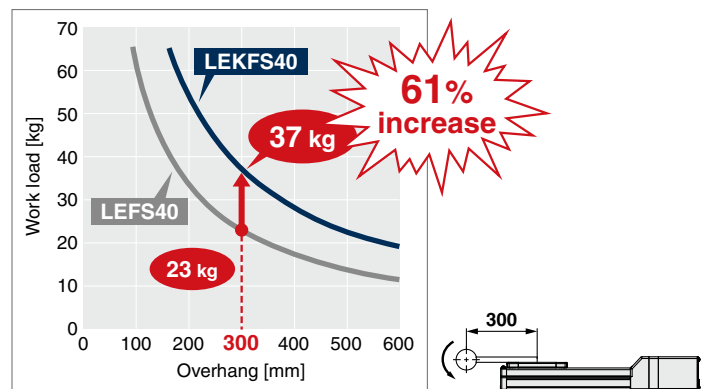
# With a 4-row circular arc on each side for high rigidity and high precision (zero clearance)

## Improved moment resistance

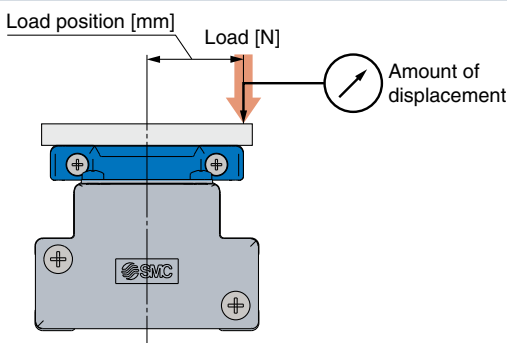


## Improved Dynamic Allowable Moment

Size	Moment direction	Work load [kg] (Overhang: 300 mm)	
		High rigidity guide LEKFS	LEFS
16	Pitching (Mep)	3.5 (16% increase)	3.0
25		7.5 (10% increase)	6.8
32		18 (35% increase)	13.3
40		37 (61% increase)	23



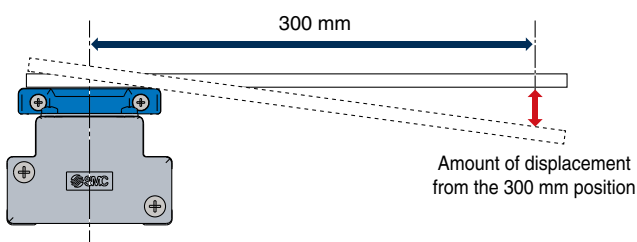
## Table displacement amount reduced to 1/2



## Table Displacement

Size	Table displacement [mm] (Overhang: 300 mm)		Load position [mm]	Load [N]
	High rigidity guide LEKFS	LEFS		
16	0.015 (50% reduction)	0.031	20	100
25	0.022 (50% reduction)	0.044	25	200
32	0.036 (50% reduction)	0.072	30	450
40	0.027 (50% reduction)	0.053	37	500

## Zero table clearance



## Table Clearance

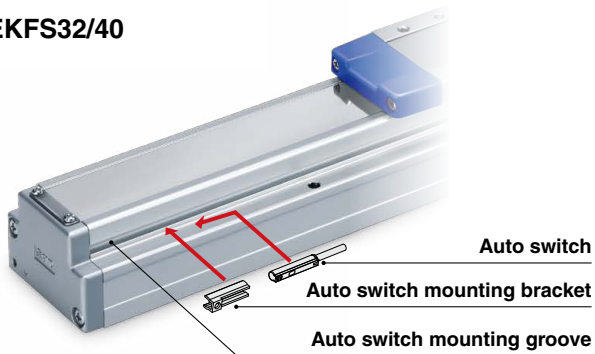
Size	Displacement due to table clearance [mm]	
	High rigidity guide LEKFS	LEFS
16	0	0.107
25	0	0.079
32	0	0.068
40	0	0.052

\* The image shows the displacement amount with zero load.

## Auto switches are mountable.

Allows for position detection of the table throughout the stroke

LEKFS32/40



LEKFS16/25



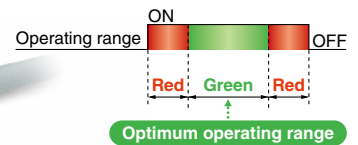
For checking the limit and the intermediate signal  
Applicable to the D-M9□, D-M9□E, and D-M9□W (2-color indicator)

\* The auto switches should be ordered separately. For details, [p. 70](#)

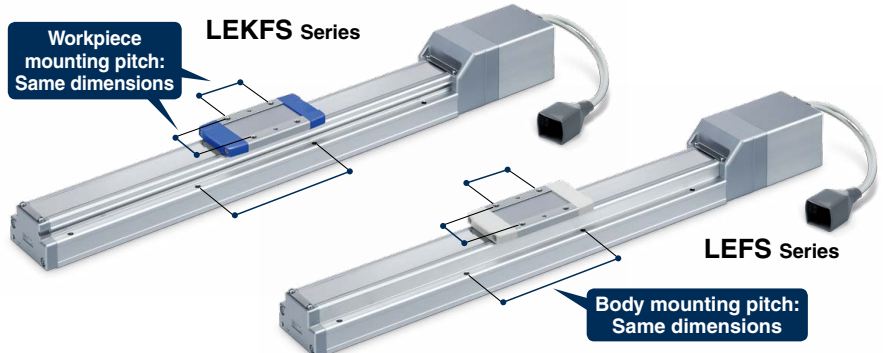
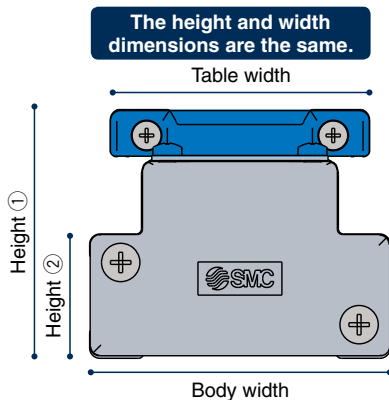
### 2-color indicator solid state auto switch

Accurate setting of the mounting position can be performed without mistakes.

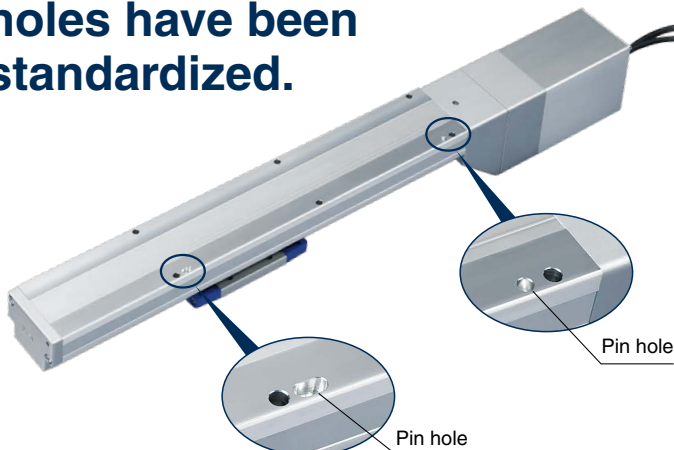
A **green** light lights up when within the optimum operating range.



## Same dimensions as the LEF/Complete mounting compatibility is ensured. \* Excludes size 16

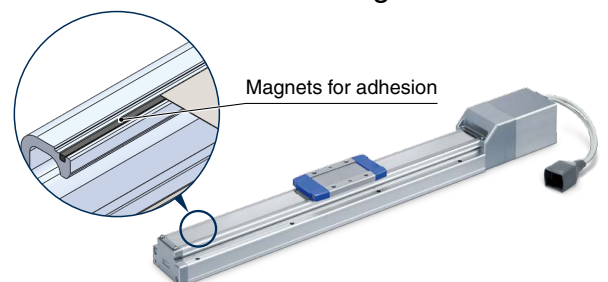


## The body bottom positioning pin holes have been standardized.



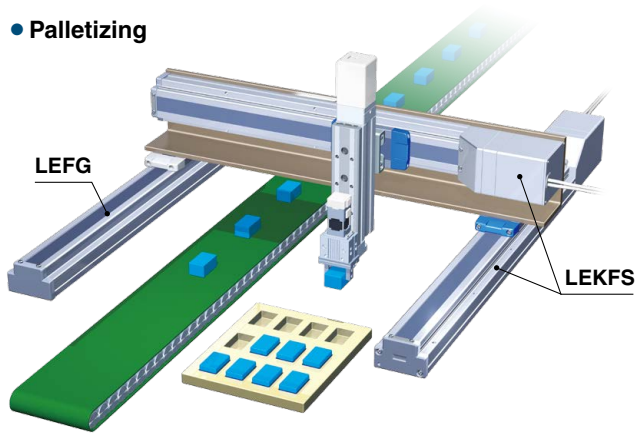
## Magnet for adhesion of the dust seal band

Improved adhesion enhances the dustproof performance and reduces dust seal band blistering.

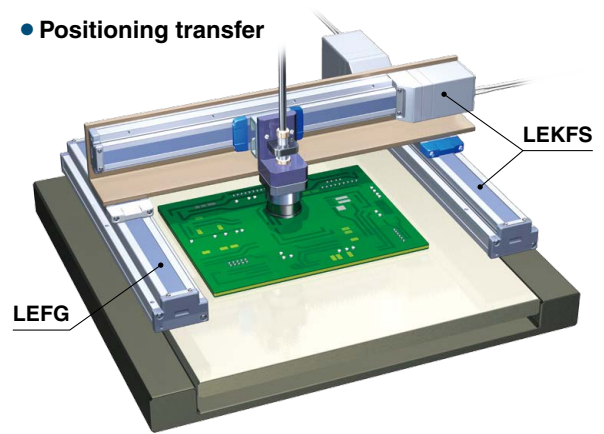


### Application Examples

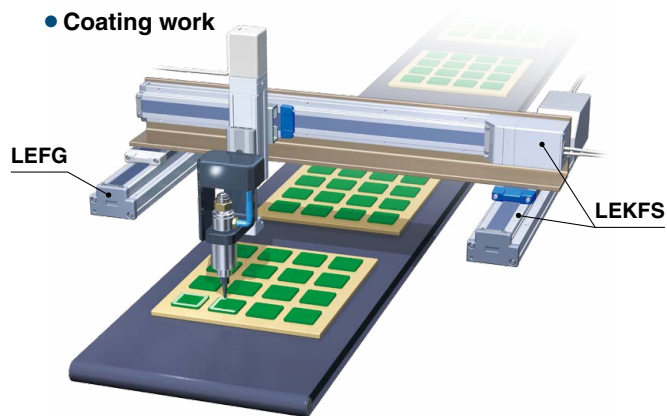
• Palletizing



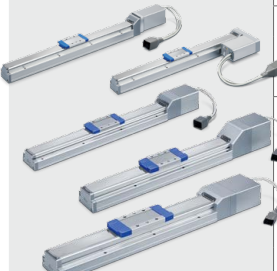

• Positioning transfer



• Coating work



### Variations

Type	Size	Lead [mm]	Stroke [mm]	Max. work load [kg]		Max. acceleration/ deceleration [mm/s <sup>2</sup> ]	Max. speed [mm/s]	
				Horizontal	Vertical			
Battery-less absolute (Step motor 24 VDC) 	16	10	100, 200, 300, 400, 500	14	2	3000	700	
		5		15	4		360	
	25	20		12	25		7.5	1100
		6		30	15		400	
	32	24		16	20		4	1200
		8		50	20		800	
	40	30	30	25	2	400		
		20	200, 300, 400, 500, 600	55	2	1200		
		10	65	23	850			
		10	60	30	300			
	AC servo motor 	25	20	100, 200, 300, 400, 500	10	4	20000	1500
			12		20	8		900
6			20		15	450		
32		24	30		5	1500		
		16	40		10	1000		
		8	45		20	500		
40		30	30	7	1500			
		20	200, 300, 400, 500, 600	50	15	1000		
		10	60	30	500			

**Series Variations Motorless Type**

**Can be used with your current motor and driver!**  
**Manufacturers of compatible motors: 18 companies**

Mitsubishi Electric Corporation	YASKAWA Electric Corporation	SANYO DENKI CO., LTD.
OMRON Corporation	Panasonic Corporation	FANUC CORPORATION
NIDEC SANKYO CORPORATION	KEYENCE CORPORATION	FUJI ELECTRIC CO., LTD.
MinebeaMitsumi Inc.	Shinano Kenshi Co., Ltd.	ORIENTAL MOTOR Co., Ltd.
FASTECH Co., Ltd.	Rockwell Automation, Inc. (Allen-Bradley)	Beckhoff Automation GmbH
Siemens AG	Delta Electronics, Inc.	ANCA Motion



Click here for details

Size	Stroke
25	100, 200, 300, 400, 500
32	100, 200, 300, 400, 500
40	200, 300, 400, 500, 600

Battery-less Absolute (Step Motor 24 VDC)

Controllers **p. 78**

- ▶ Step data input type  
JXC51/61 Series
- ▶ EtherCAT/EtherNet/IP™/PROFINET/DeviceNet®/  
IO-Link/CC-Link direct input type  
JXCE□/91/P1/D1/L□/M1 Series



With STO sub-function



AC Servo Motor

Drivers **p. 96**

- ▶ For absolute encoders
  - Pulse input type/Positioning type  
LECSB-T Series
  - CC-Link direct input type  
LECS-C-T Series
  - SSCNET III/H type  
LECS-S-T Series
  - MECHATROLINK type  
LECY□ Series



- ▶ For incremental encoders
  - Pulse input type/Positioning type  
LECSA Series





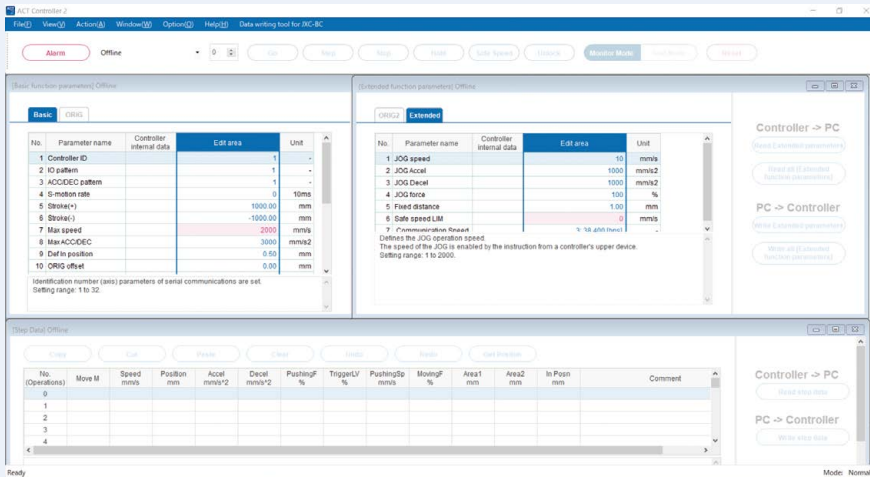
**ACT 2**

Controller Setting Software ACT Controller 2

Easy-to-use setting software ACT Controller 2 (For PC)

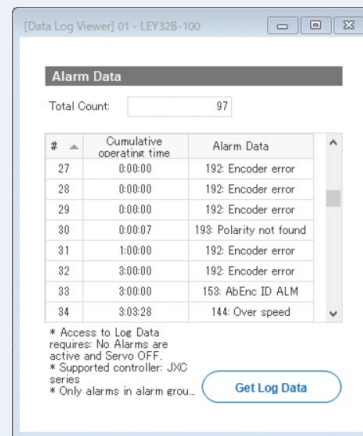
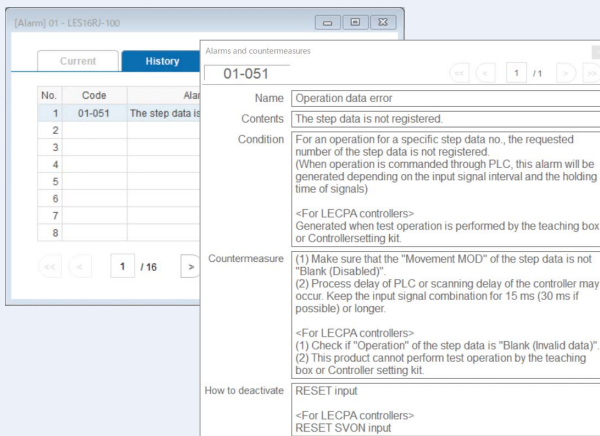
Various functions available in normal mode (Compared with the existing ACT Controller)

● Parameter and step data setting



\* Customers operating computers with specifications other than Windows 10/64 bit should use the existing ACT Controller.

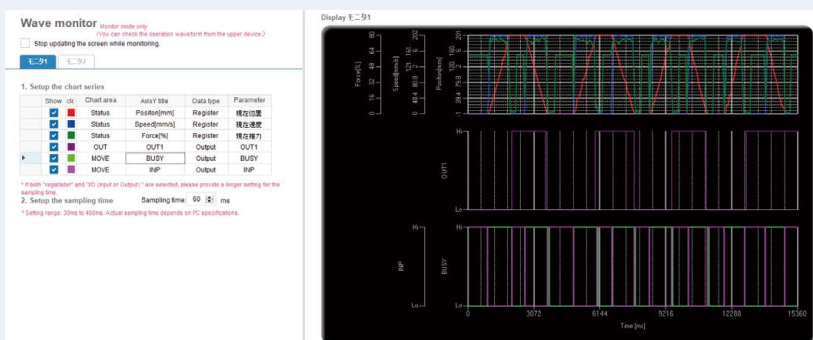
● Alarm confirmation



When an alarm is generated, the alarm details and countermeasures can be confirmed.

When an alarm is generated, the cumulative start-up time of the controller can be confirmed.

● Waveform monitoring



The position, speed, force, and input/output signals' waveform data during operation can be measured.

\* Waveform data cannot be measured during an ACT Controller 2 test operation.

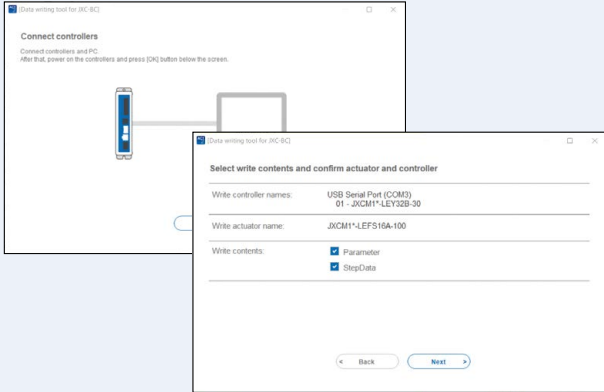


Step Data Input Type JXC51/61 Series p. 79

**ACT 2**

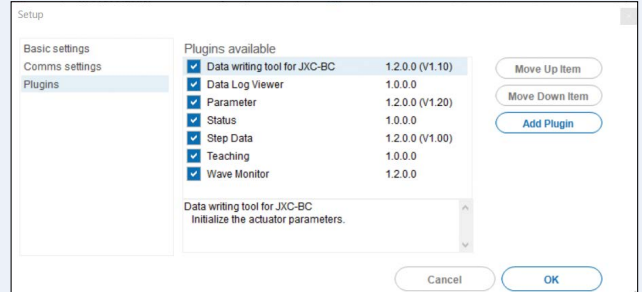
**Controller Setting Software ACT Controller 2**

• **The JXC-BC writing tool**



The writing tool can be used to write the connected actuator's parameters and step data to a JXC series blank controller.

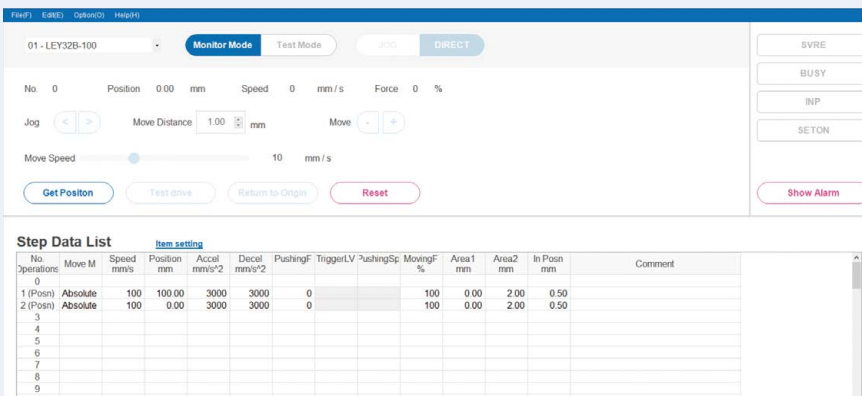
• **Customizable plug-in functions**



Which plug-in functions are displayed as well as the display order are customizable. Customers can add the functions they require.

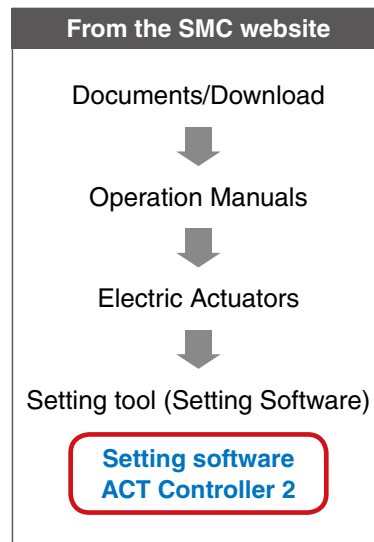
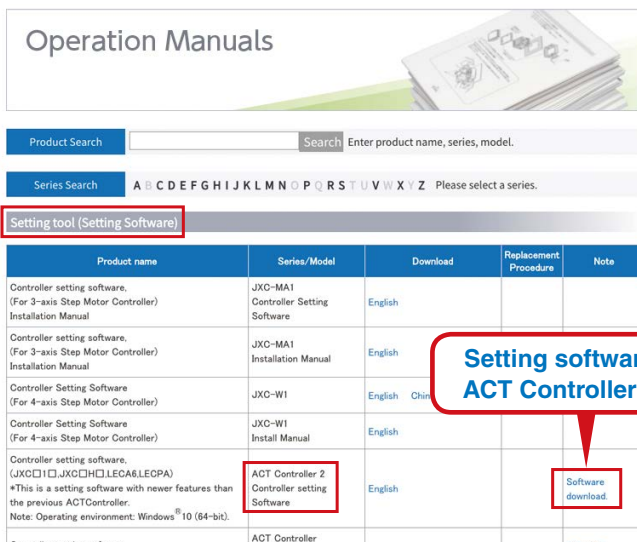
In normal mode, various other test operation methods (program operation, jogging, moving of the constant rate, etc.), signal status monitoring, one-touch switching between Japanese and English, and other functions are available.

**For immediate use, operate in easy mode.**



Step data setting, various test operations, and status confirmation can be done on a single screen.

**How to download the setting software**



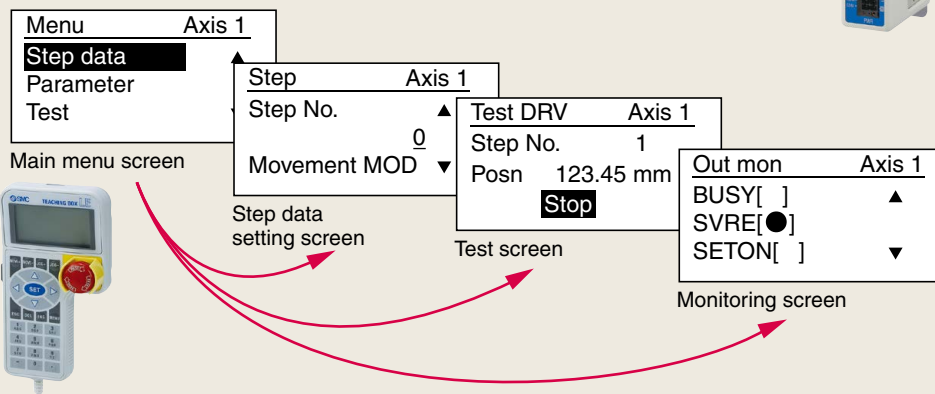
Step Data Input Type JXC51/61 Series p. 79



Teaching Box

◎ Normal Mode

- Multiple step data can be stored in the teaching box and transferred to the controller.
- Continuous test drive by up to 5 step data



Teaching box screen

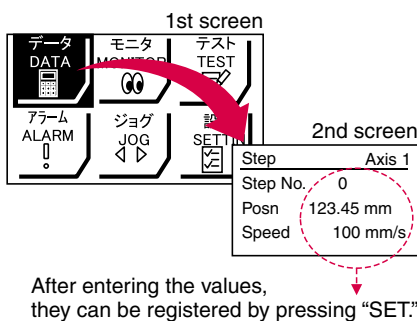
- Each function (step data setting, test drive, monitoring, etc.) can be selected from the main menu.

◎ Easy Mode

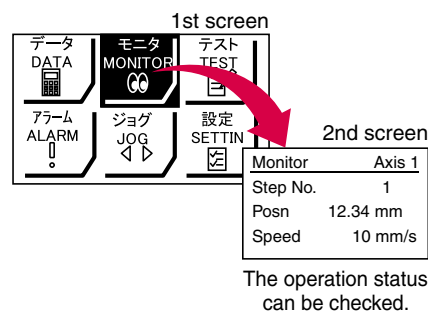
- The simple screen without scrolling promotes ease of setting and operation.
- Choose an icon from the first screen to select a function.
- Set the step data and check the monitor on the second screen.



Example of setting the step data



Example of checking the operation status



Teaching box screen

- Data can be set by inputting only the position and speed. (Other conditions are preset.)

Step	Axis 1
Step No.	0
Posn	50.00 mm
Speed	200 mm/s



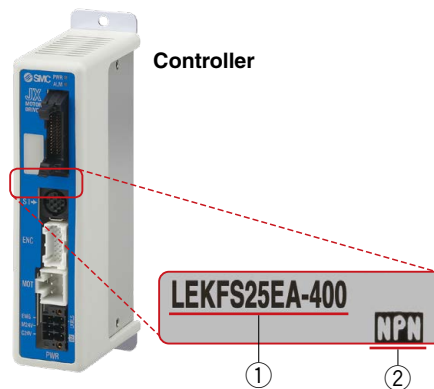
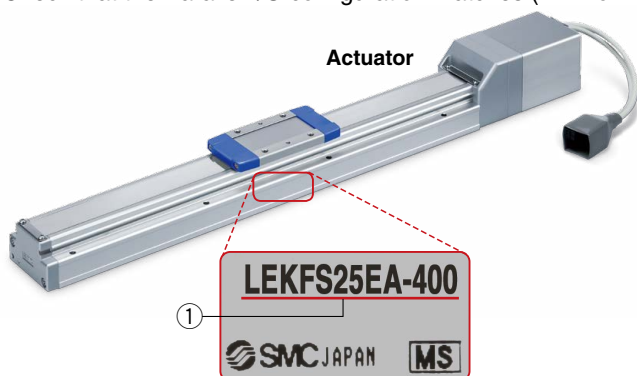
Step	Axis 1
Step No.	1
Posn	80.00 mm
Speed	100 mm/s

The actuator and controller are provided as a set. (They can be ordered separately as well.)

Confirm that the combination of the controller and actuator is correct.

<Check the following before use.>

- ① Check the actuator label for the model number. This number should match that of the controller.
- ② Check that the Parallel I/O configuration matches (NPN or PNP).





## Function

Item	Step data input type JXC51/61
Step data and parameter setting	<ul style="list-style-type: none"> <li>Input from controller setting software (PC)</li> <li>Input from teaching box</li> </ul>
Step data "position" setting	<ul style="list-style-type: none"> <li>Numerical value input from controller setting software (PC) or teaching box</li> <li>Input numerical value</li> <li>Direct teaching</li> <li>JOG teaching</li> </ul>
Number of step data	64 points
Operation command (I/O signal)	Step No. [IN <sup>+</sup> ] input ⇒ [DRIVE] input
Completion signal	[INP] output

## Setting Items

TB: Teaching box PC: Controller setting software

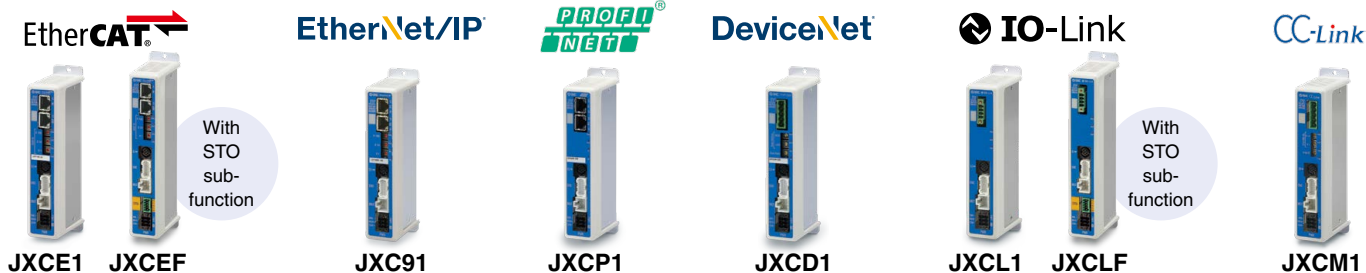
Item		Contents	Easy Mode		Normal Mode	Step data input type JXC51/61
			TB	PC	TB/PC	
Step data setting (Excerpt)	Movement MOD	Selection of "absolute position" and "relative position"	△	●	●	Set at ABS/INC
	Speed	Transfer speed	●	●	●	Set in units of 1 mm/s
	Position	[Position]: Target position [Pushing]: Pushing start position	●	●	●	Set in units of 0.01 mm
	Acceleration/Deceleration	Acceleration/deceleration during movement	●	●	●	Set in units of 1 mm/s <sup>2</sup>
	Pushing force	Rate of force during pushing operation	●	●	●	Set in units of 1%
	Trigger LV	Target force during pushing operation	△	●	●	Set in units of 1%
	Pushing speed	Speed during pushing operation	△	●	●	Set in units of 1 mm/s
	Moving force	Force during positioning operation	△	●	●	Set to 100%
	Area output	Conditions for area output signal to turn ON	△	●	●	Set in units of 0.01 mm
	In position	[Position]: Width to the target position [Pushing]: How much it moves during pushing	△	●	●	Set to 0.5 mm or more (Units: 0.01 mm)
Parameter setting (Excerpt)	Stroke (+)	+ side position limit	×	×	●	Set in units of 0.01 mm
	Stroke (-)	- side position limit	×	×	●	Set in units of 0.01 mm
	ORIG direction	Direction of the return to origin can be set.	×	×	●	Compatible
	ORIG speed	Speed during return to origin	×	×	●	Set in units of 1 mm/s
	ORIG ACC	Acceleration during return to origin	×	×	●	Set in units of 1 mm/s <sup>2</sup>
Test	JOG		●	●	●	Continuous operation at the set speed can be tested while the switch is being pressed.
	MOVE		×	●	●	Operation at the set distance and speed from the current position can be tested.
	Return to ORIG		●	●	●	Compatible
	Test drive	Operation of the specified step data	●	●	● (Continuous operation)	Compatible
	Forced output	ON/OFF of the output terminal can be tested.	×	×	●	Compatible
Monitor	DRV mon	Current position, speed, force, and the specified step data can be monitored.	●	●	●	Compatible
	In/Out mon	Current ON/OFF status of the input and output terminal can be monitored.	×	×	●	Compatible
ALM	Status	Alarm currently being generated can be confirmed.	●	●	●	Compatible
	ALM Log record	Alarms generated in the past can be confirmed.	×	×	●	Compatible
File	Save/Load	Step data and parameters can be saved, forwarded, and deleted.	×	×	●	Compatible
Other	Language	Can be changed to Japanese or English	●	●	●	Compatible

△: Can be set from TB Ver. 2.\*\* (The version information is displayed on the initial screen.)

## Fieldbus Network

# EtherCAT/EtherNet/IP™/PROFINET/ DeviceNet®/IO-Link/CC-Link Direct Input Type Step Motor Controller/JXC□ Series p. 86

**ACT 2** Controller Setting Software  
ACT Controller 2



○ **Two types of operation command**

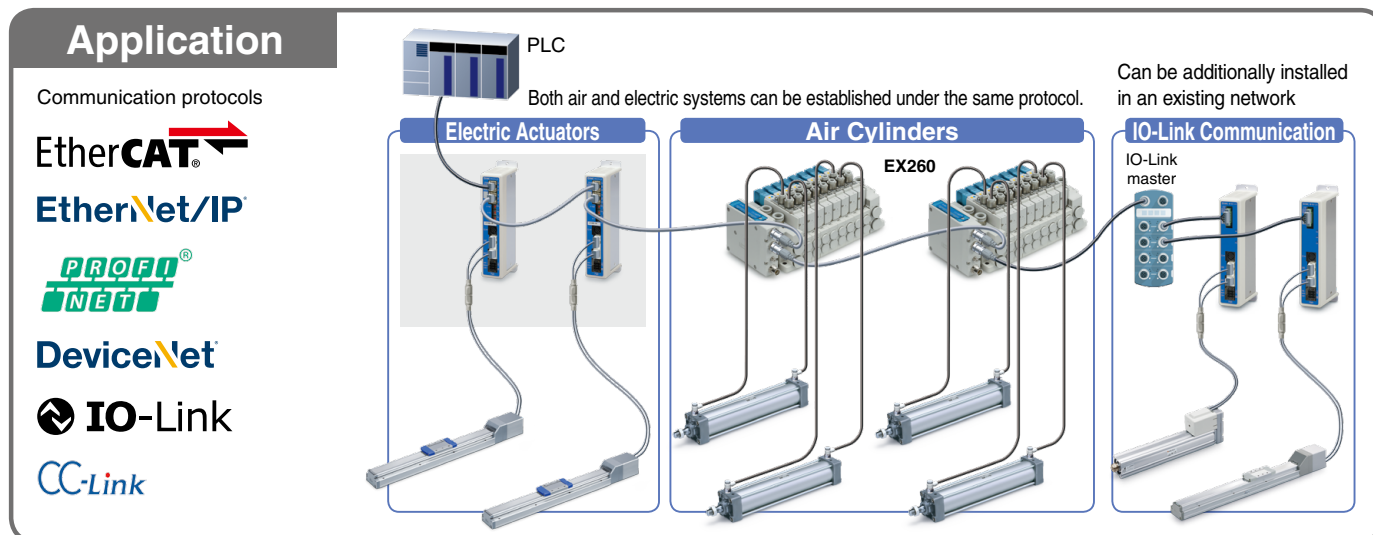
**Step no. defined operation:** Operate using the preset step data in the controller.  
**Numerical data defined operation:** The actuator operates using values such as position and speed from the PLC.

○ **Numerical monitoring available**

Numerical information, such as the current speed, current position, and alarm codes, can be monitored on the PLC.

○ **Transition wiring of communication cables**

Two communication ports are provided.  
 \* For the DeviceNet® type and CC-Link type, transition wiring is possible using a branch connector.  
 \* 1 to 1 in the case of IO-Link



**ACT 2** Controller Setting Software ACT Controller 2 From p. 5

## Easy-to-use setting software ACT Controller 2 (For PC)

**Various functions available in normal mode** (Compared with the existing ACT Controller)

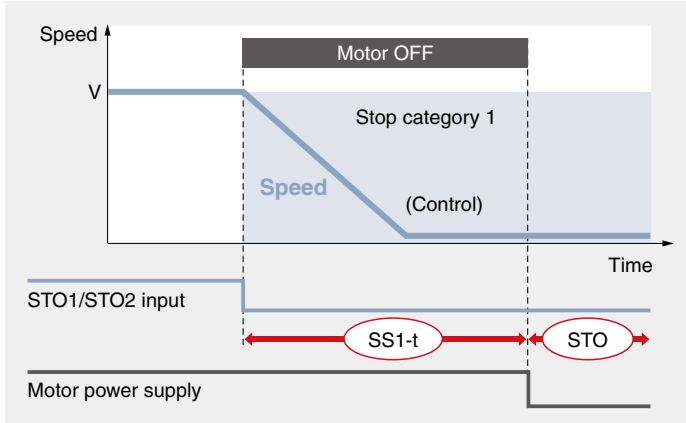
- Parameter and step data setting
- The JXC-BC writing tool
- Alarm confirmation
- Customizable plug-in functions
- Waveform monitoring

\* Customers operating computers with specifications other than Windows 10/64 bit should use the existing ACT Controller.

## Controller with STO Sub-Function **JXC**□F Series

### Safety function/STO, SS1-t (EN 61800-5-2)

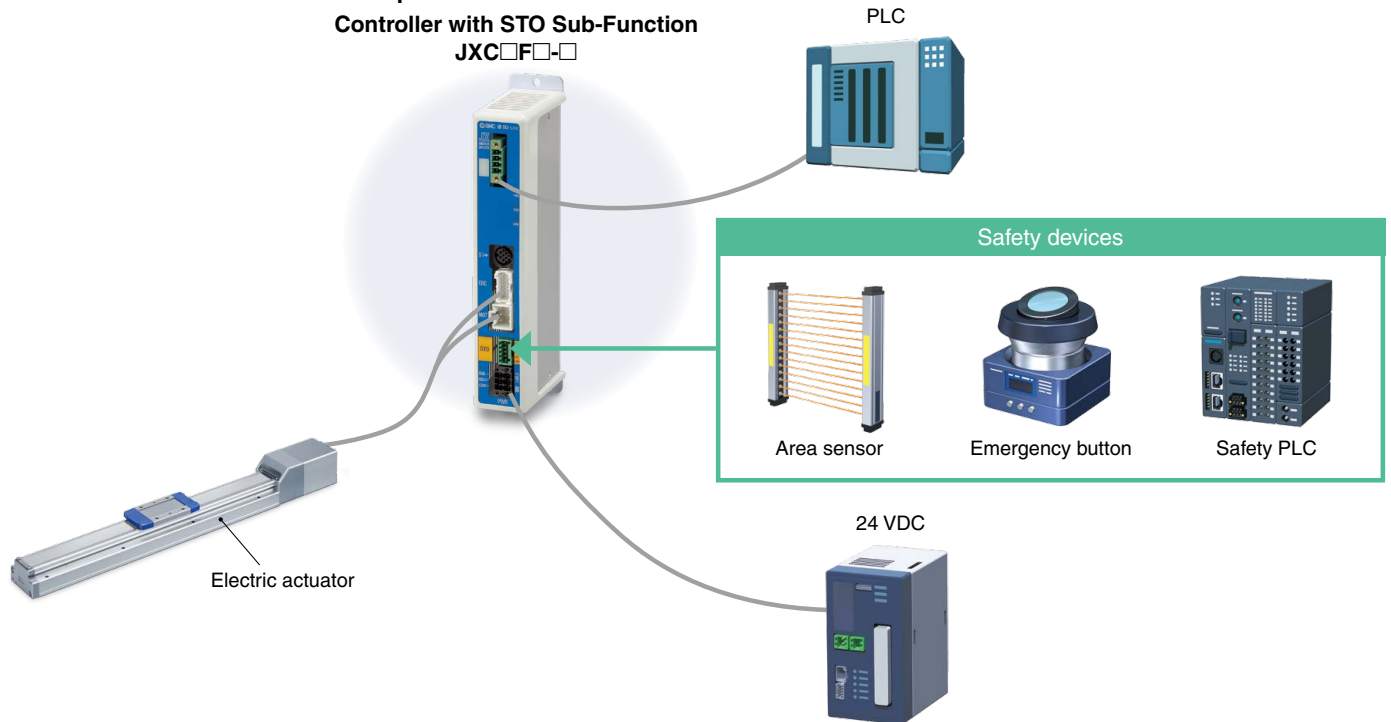
When the STO signal is input from the safety device, after the SS1-t operation is completed, the unit shifts to the STO operation and the power supply of the motor is turned OFF.



SS1-t operation: Safe Stop 1—After deceleration, a shift to the STO operation occurs.

STO operation: Safe Torque Off—The power supply of the motor is turned OFF.

#### External Device Connection Example



## Certified by a third-party organization

Facilitates the safety designing of equipment and facilities (compliant with ISO/IEC standards)



EN 61508 SIL 3\*1  
 EN 62061 SIL CL 3\*1  
 EN ISO 13849-1 Cat. 3 PL e  
 EN 61800-5-2 STO, SS1-t

#### SIL (Safety Integrity Level)

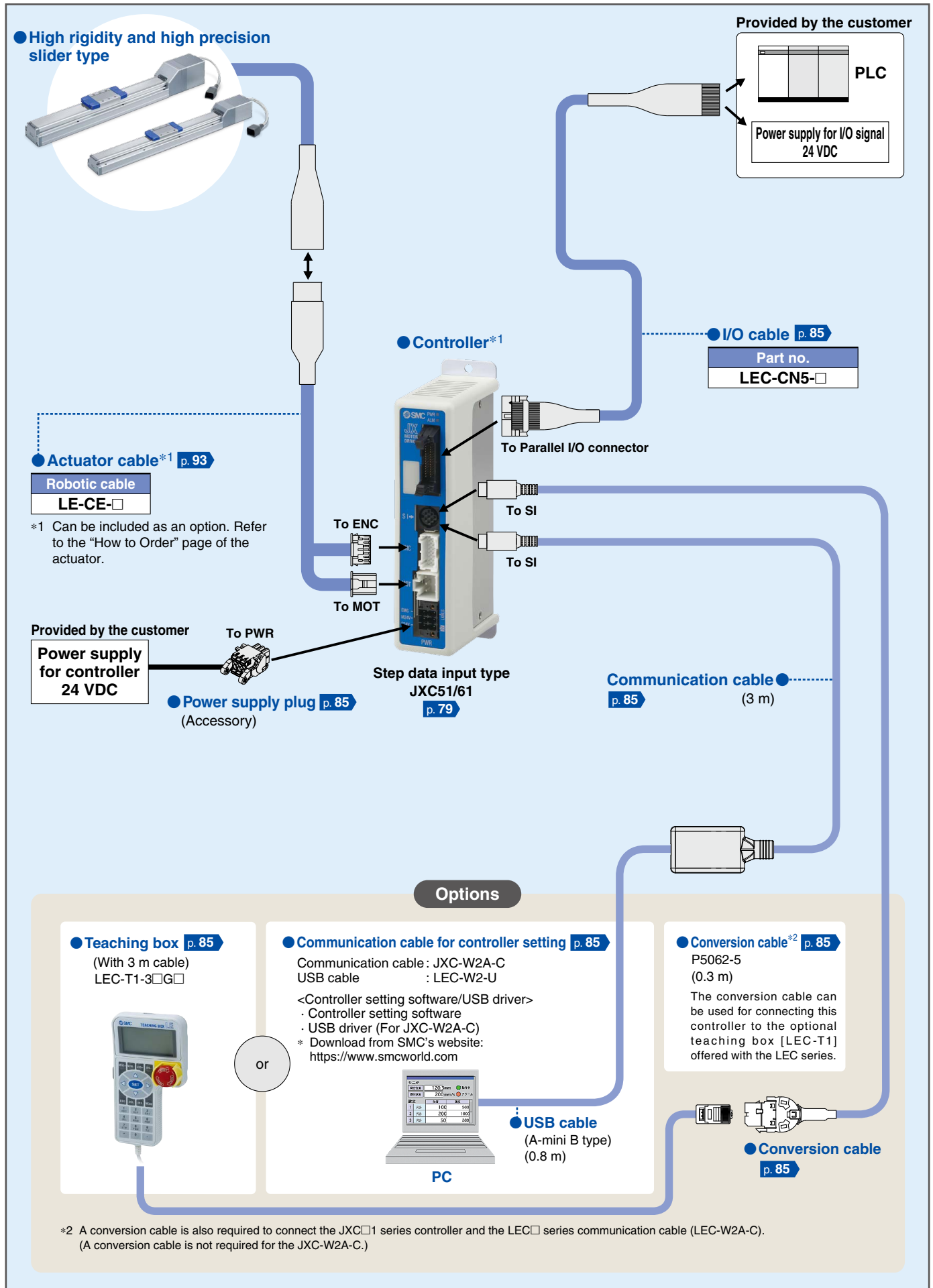
A safety integrity level as defined by international standard IEC 61508/62061  
 There are 4 levels of safety, with the lowest being SIL 1 and the highest being SIL 4.

#### PL (Performance Level)

A scale used to define the capability of safety-related parts to perform a safety function as defined by international standard ISO 13849  
 There are 5 levels of safety function, with the lowest being PL a and the highest being PL e.

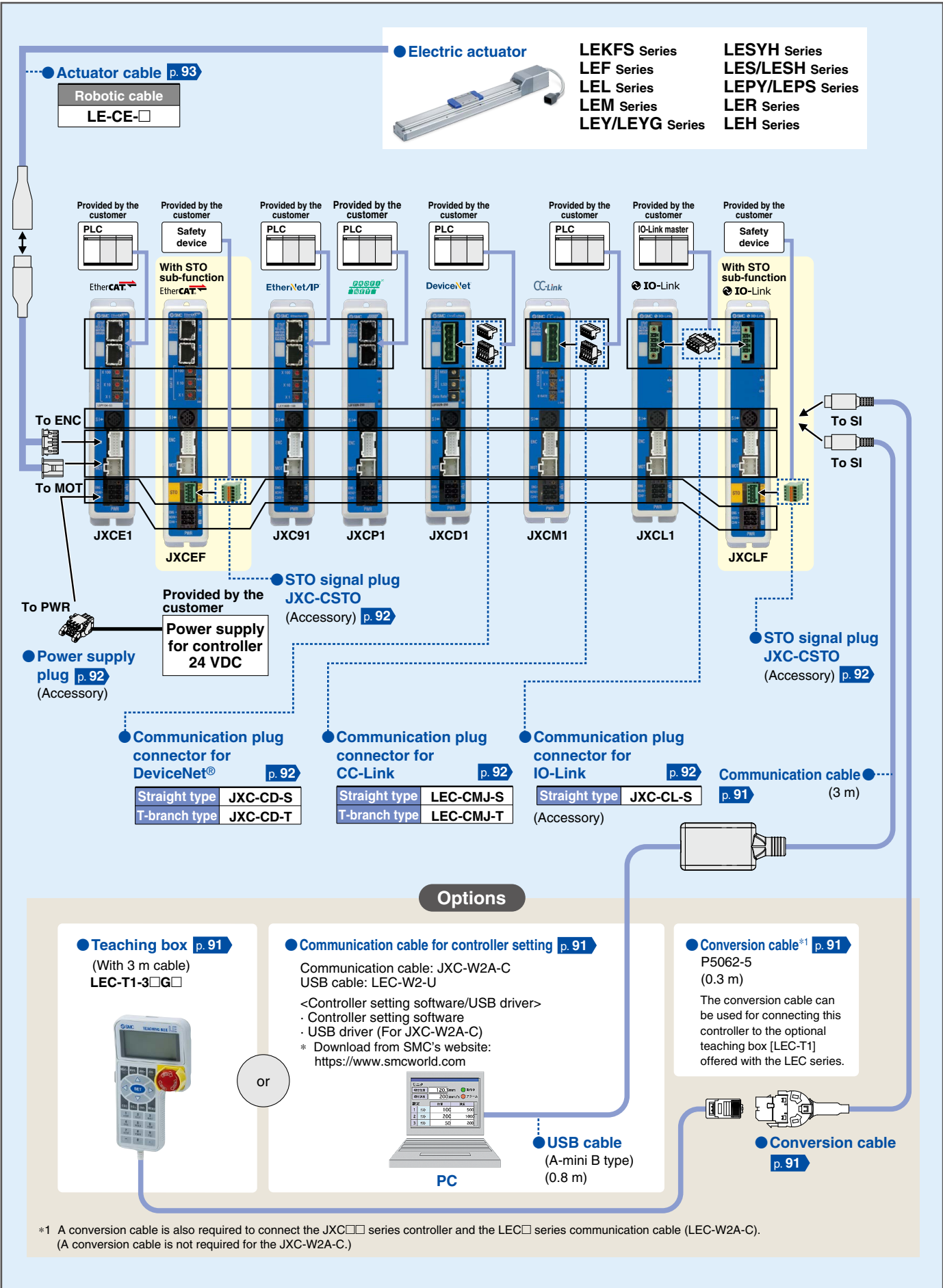
\*1 The above safety integrity level is the max. value. The achievable level varies depending on the configuration and inspection method of the component. Be sure to refer to "Safety Manual: JXC#-OMY0009" for more information.

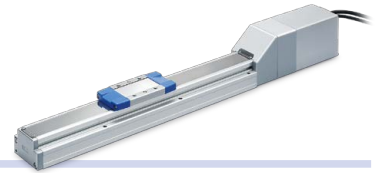
System Construction/General Purpose I/O










# System Construction/Fieldbus Network

(EtherCAT/EtherNet/IP™/PROFINET/DeviceNet®/IO-Link/CC-Link Direct Input Type)





**LECSA/LECS□-T/LECY□ Series List** p. 96

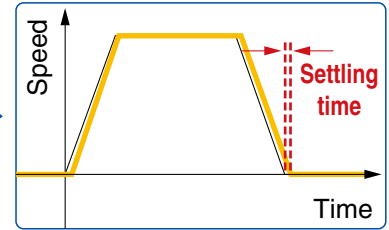
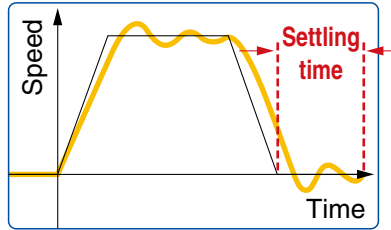
Series		Compatible motor		Control method			Application/Function			Compatible option
		100 W	200 W	Positioning*1	Pulse	Network direct input	Synchronous*2	Pushing operation*4	Safety function STO	Setup software
Incremental Type	 <p><b>LECSA</b> (Pulse input type/ Positioning type)</p>	●	●	Up to 7 points ●	●					● LEC-MRC2
Absolute Type	 <p><b>LECSB-T</b> (Pulse input type/ Positioning type)</p>	●	●	Up to 255 points ●	●			*4 ●		● LEC-MRC2
	 <p><b>CC-Link</b> <b>LECSB-T</b> (CC-Link direct input type)</p>	●	●	Up to 255 points ●		● CC-Link Ver. 1.10				● LEC-MRC2
	 <p><b>SSCNET III/H</b> <b>LECSB-T</b> (SSCNET III/H type) Compatible with Mitsubishi Electric's servo system controller network</p>	●	●			● SSCNET III/H	*2 ●	*4 ●		● LEC-MRC2
	 <p><b>MECHATROLINK-II</b> <b>LECSB-T</b></p>	●	●			● MECHATRO LINK-II	*3 ●			● SigmaWin+™
	 <p><b>MECHATROLINK-II</b> <b>LECYM</b></p>	●	●			● MECHATRO LINK-II	*3 ●			● SigmaWin+™
	 <p><b>MECHATROLINK-III</b> <b>LECYU</b></p>	●	●			● MECHATRO LINK-III	*3 ●			● SigmaWin+™

\*1 For positioning types, the settings need to be changed in order to use the max. set values. Setup software (MR Configurator2™) LEC-MRC2 is required.  
 \*2 Available when a Mitsubishi motion controller is used as upper level equipment  
 \*3 Available when a motion controller is used as upper level equipment  
 \*4 The LECSB2-T is only applicable when the control method is positioning. The point table is used to set the pushing operation settings.  
 To set the pushing operation settings, an additional dedicated file (pushing operation extension file) must be downloaded separately to be used with the setup software (MR Configurator2™: LEC-MRC2□). Please download this dedicated file from the SMC website: <https://www.smcworld.com>  
 When selecting the LECSS2-T, combine it with upper level equipment (such as the Simple Motion module manufactured by Mitsubishi Electric Corporation) which has a pushing operation function.  
 \*\* For customer-provided PLC and motion controller setting and usage instructions, confirm with the retailer or manufacturer.

## Gain adjustment using auto tuning

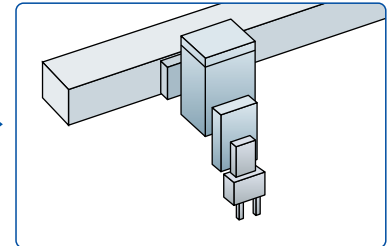
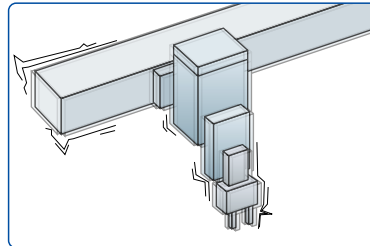
### Auto-tuning function

- Controls the difference between the command value and the actual action



### Vibration suppression control function

- Automatically suppresses low-frequency machine vibrations (1 to 100 Hz)



## With display setting function

### One-touch adjustment button

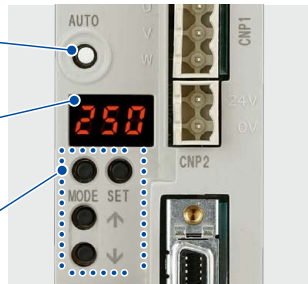
One-touch servo adjustment

### Display

Display the monitor, parameters, and alarm.

### Settings

Set the parameters, monitor display, etc., with push buttons.



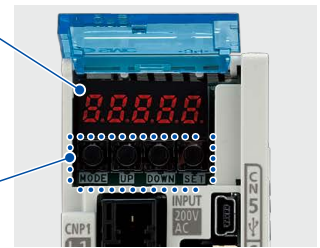
**LECSA**

### Display

Display the monitor, parameters, and alarm.

### Settings

Set the parameters, monitor display, etc., with push buttons.



(With the front cover opened)

**LECSB-T**

### Display

Display the communication status with the driver, the alarm, and the point table no.

### Settings

Control the Baud rate, station number, and the occupied station count.



(With the front cover opened)

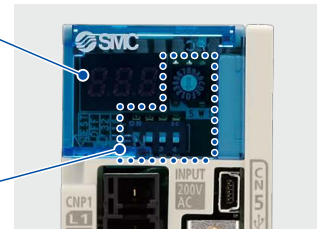
**LECS-C-T**

### Display

Display the communication status with the driver and the alarm.

### Settings

Switches for axis setting, control axis deactivation, switching to the test operation, etc.



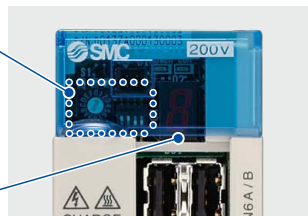
**LECS2-T**

### Settings

Switches for station address, communication speed, number of transmission bytes, etc.

### Display

Display the driver status and alarm.



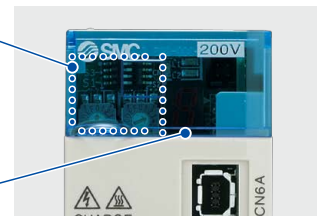
**LECYM**

### Settings

Switches for station address, number of transmission bytes, etc.

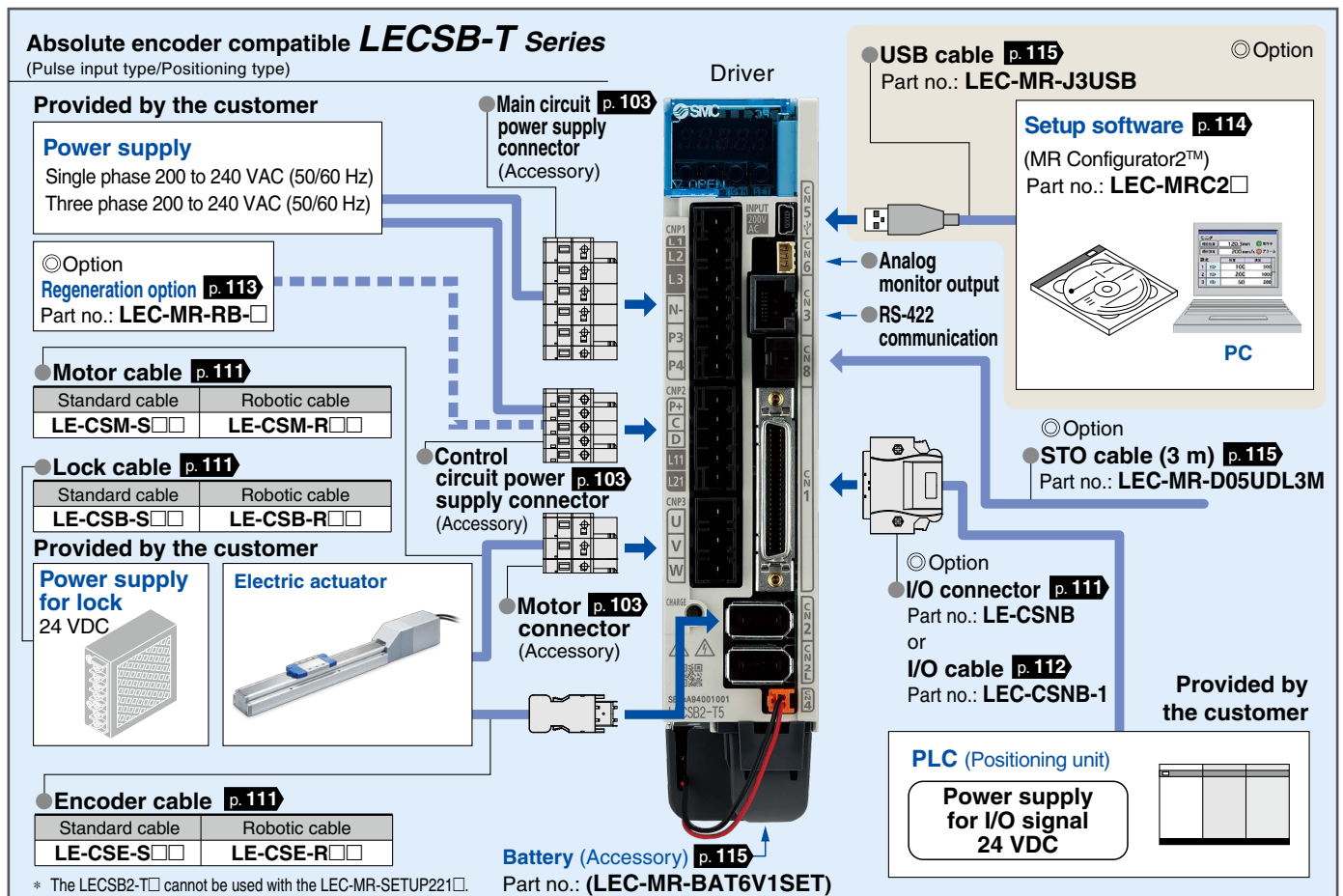
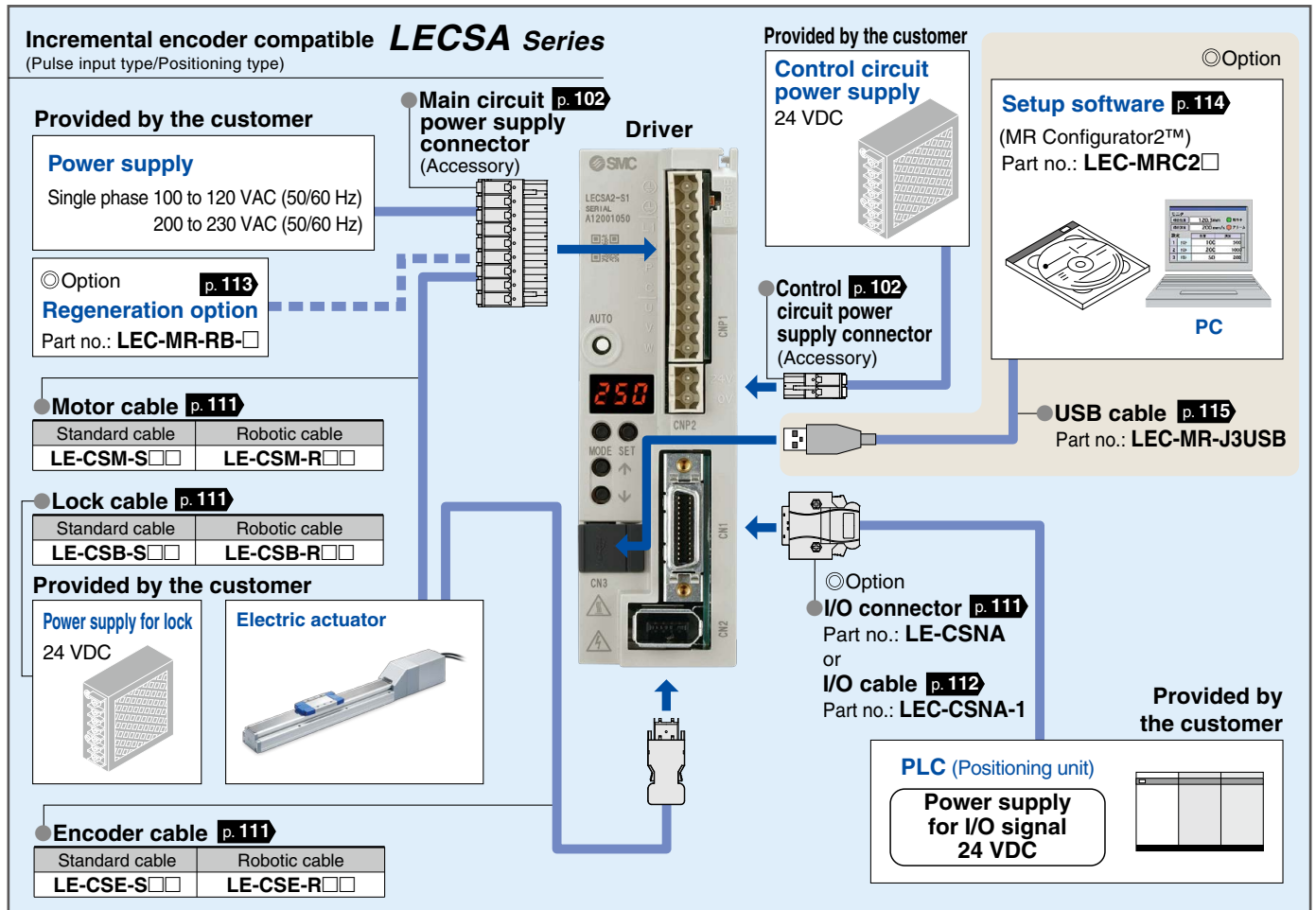
### Display

Display the driver status and alarm.



**LECYU**

## System Construction



\* The LECSB2-T□ cannot be used with the LEC-MR-SETUP221□.



**System Construction**

**Absolute encoder compatible *LECSA/LECS□-T Series***

(CC-Link direct input type)

**Provided by the customer**

**Power supply**

Single phase 200 to 230 VAC (50/60 Hz)  
Three phase 200 to 230 VAC (50/60 Hz)

Option

**Regeneration option** p. 113

Part no.: **LEC-MR-RB-□**

**Motor cable** p. 111

Standard cable	Robotic cable
<b>LE-CSM-S□□</b>	<b>LE-CSM-R□□</b>

**Lock cable** p. 111

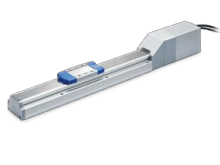
Standard cable	Robotic cable
<b>LE-CSB-S□□</b>	<b>LE-CSB-R□□</b>

**Provided by the customer**

**Power supply for lock**

24 VDC

**Electric actuator**



**Encoder cable** p. 111

Standard cable	Robotic cable
<b>LE-CSE-S□□</b>	<b>LE-CSE-R□□</b>

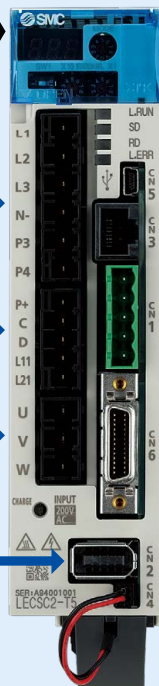
Main circuit power supply connector (Accessory)

Control circuit power supply connector (Accessory)

Motor connector (Accessory)

Battery (Accessory) p. 115  
Part no.: **(LEC-MR-J3BAT)**

**Driver**



USB cable p. 115

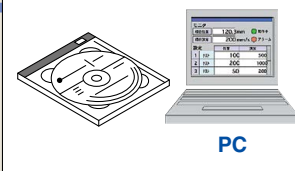
Part no.: **LEC-MR-J3USB**

Option

**Setup software** p. 114

(MR Configurator2™)

Part no.: **LEC-MRC2□**



PC

RS-422 communication

CC-Link connector\*1 (Accessory)

Option

I/O connector p. 111

Part no.: **LE-CSNA**

or

I/O cable p. 112

Part no.: **LEC-CSNA-1**

Provided by the customer

PLC (CC-Link master unit)

Power supply for I/O signal  
24 VDC



\* The LECSC2-T□ cannot be used with the LEC-MR-SETUP221□. \*1 Product number: K05A50230600 manufactured by Mitsubishi Electric System & Service Co., Ltd.

**Absolute encoder compatible *LECSS-T Series***



**Provided by the customer**

**Power supply**

Single phase 200 to 240 VAC (50/60 Hz)  
Three phase 200 to 240 VAC (50/60 Hz)

Option

**Regeneration option** p. 113

Part no.: **LEC-MR-RB-□**

**Motor cable** p. 111

Standard cable	Robotic cable
<b>LE-CSM-S□□</b>	<b>LE-CSM-R□□</b>

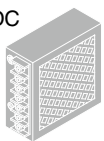
**Lock cable** p. 111

Standard cable	Robotic cable
<b>LE-CSB-S□□</b>	<b>LE-CSB-R□□</b>

**Provided by the customer**

**Power supply for lock**

24 VDC



**Electric actuator**



**Encoder cable** p. 111

Standard cable	Robotic cable
<b>LE-CSE-S□□</b>	<b>LE-CSE-R□□</b>

Main circuit power supply connector (Accessory)

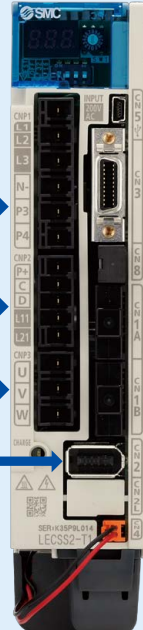
Control circuit power supply connector (Accessory)

Motor connector (Accessory)

Battery (Accessory) p. 115

Part no.: **(LEC-MR-BAT6V1SET)**

**Driver**



USB cable p. 115

Part no.: **LEC-MR-J3USB**

Option

**Setup software** p. 114

(MR Configurator2™)

Part no.: **LEC-MRC2□**



PC

Option

I/O connector p. 111

Part no.: **LE-CSNS**

or

I/O cable p. 112

Part no.: **LEC-CSNS-1**

Option

STO cable (3 m) p. 115

Part no.: **LEC-MR-D05UDL3M**

Option

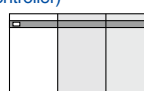
SSCNET III optical cable p. 112

Part no.: **LE-CSS-□**

Provided by the customer

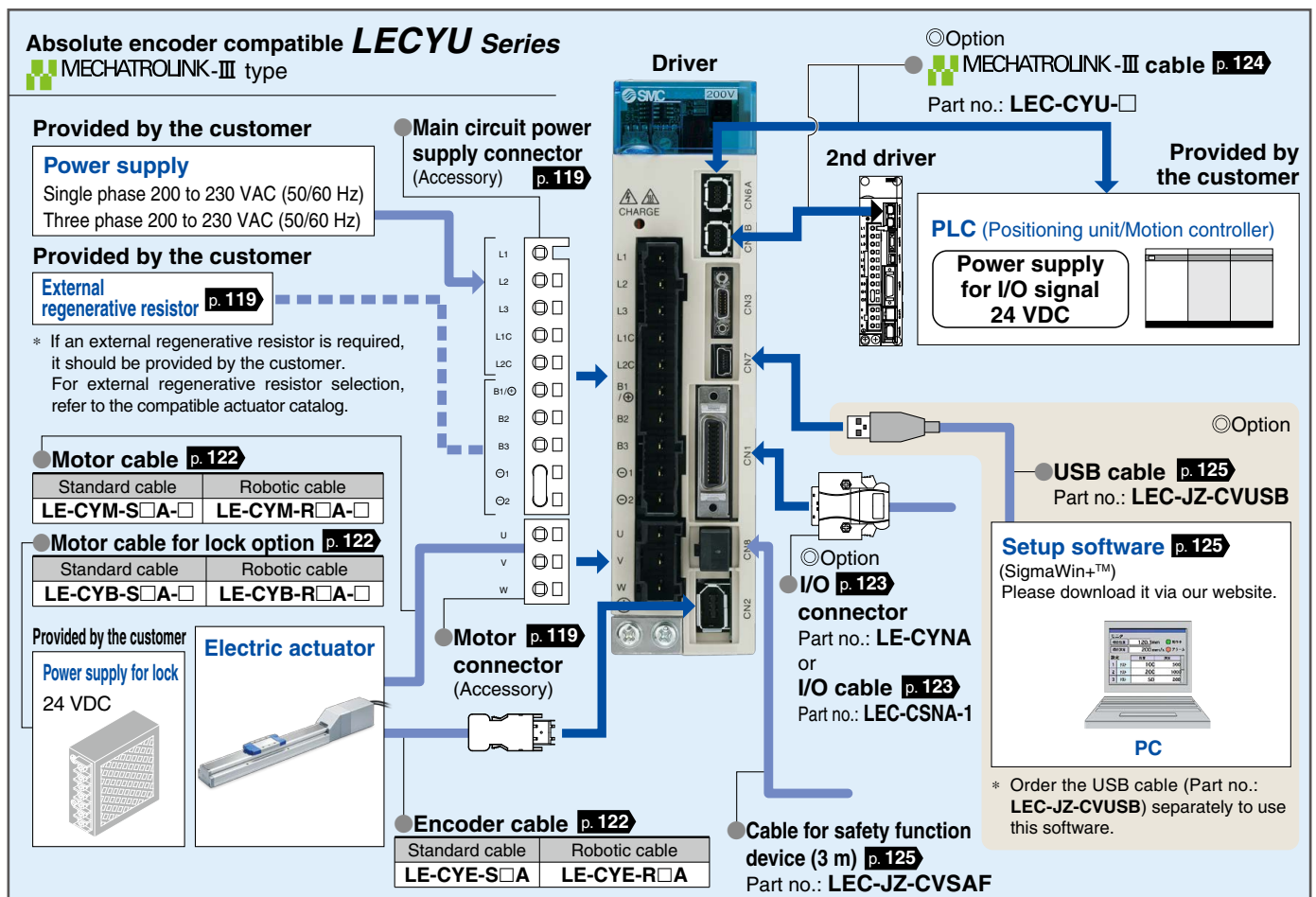
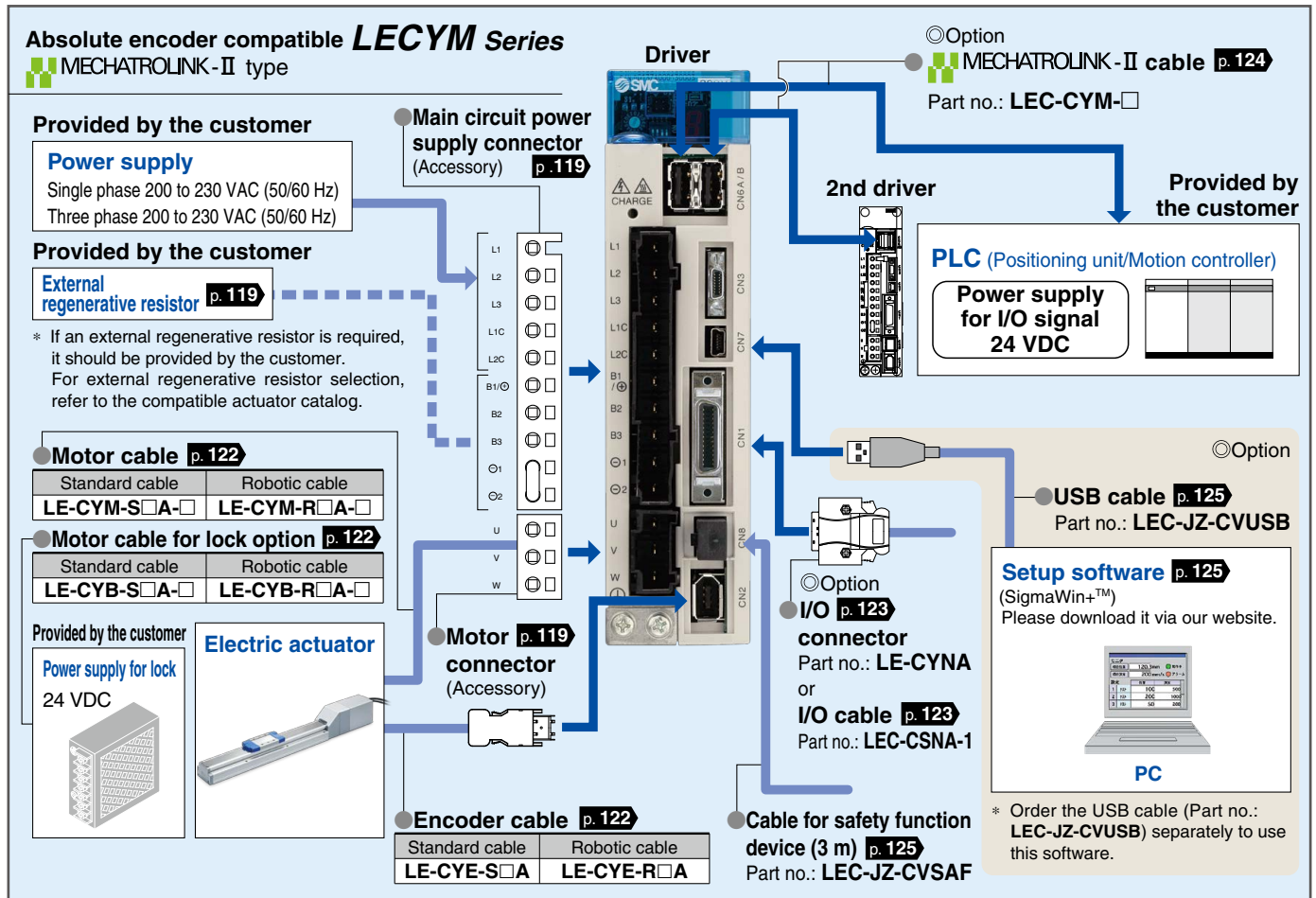
PLC (Positioning unit/Motion controller)

Power supply for I/O signal  
24 VDC



\* The LECSS2-T□ cannot be used with the LEC-MR-SETUP221□.

## System Construction



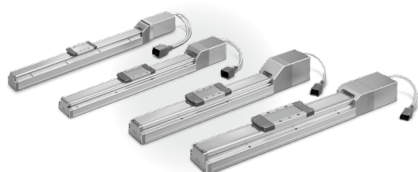


# CONTENTS

## Electric Actuator

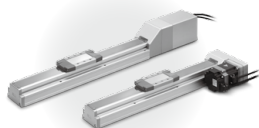
### High Rigidity and High Precision Slider Type **LEKFS Series**

#### High Rigidity and High Precision Slider Type **LEKFS Series** Battery-less Absolute (Step Motor 24 VDC)



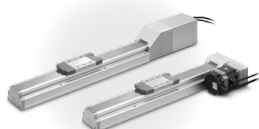
Model Selection .....	p. 21
How to Order .....	p. 37
Specifications .....	p. 39
Weight .....	p. 39
Construction .....	p. 40
Dimensions .....	p. 42

#### High Rigidity and High Precision Slider Type/Ball Screw Drive **LEKFS Series** AC Servo Motor **LECS□ Series**



Model Selection .....	p. 27
How to Order .....	p. 50
Specifications .....	p. 51
Weight .....	p. 51
Construction .....	p. 52
Dimensions .....	p. 54

#### High Rigidity and High Precision Slider Type/Ball Screw Drive **LEKFS Series** AC Servo Motor **LECY□ Series**



Model Selection .....	p. 35
How to Order .....	p. 60
Specifications .....	p. 61
Weight .....	p. 61
Construction .....	p. 62
Dimensions .....	p. 64

Auto Switch Mounting .....	p. 70
Specific Product Precautions .....	p. 74
Battery-less Absolute Encoder Type Specific Product Precautions .....	p. 76

## Controllers **JXC□ Series**

### Controller (Step Data Input Type) **JXC51/61 Series** Battery-less Absolute (Step Motor 24 VDC)



How to Order .....	p. 79
Specifications .....	p. 79
Dimensions .....	p. 81
Options .....	p. 85
Actuator Cable .....	p. 93

### Step Motor Controller **JXCE□/91/P1/D1/L□/M1 Series** Battery-less Absolute (Step Motor 24 VDC)



How to Order .....	p. 86
Specifications .....	p. 87
Dimensions .....	p. 88
Options .....	p. 91
Actuator Cable .....	p. 93

JXC51/61/E□/91/P1/D1/L□/M1 Series Precautions Relating to Differences in Controller Versions .....	p. 94
--	-------

## AC Servo Motor Drivers **LECSA/LECS□-T/LECY□ Series**

### AC Servo Motor Driver **LECSA/LECS□-T Series**



How to Order .....	p. 97
Dimensions .....	p. 98
Specifications .....	p. 100
Options .....	p. 111

### AC Servo Motor Driver **LECYM/LECYU Series**



How to Order .....	p. 116
Dimensions .....	p. 116
Specifications .....	p. 117
Options .....	p. 122

Specific Product Precautions .....	p. 126
------------------------------------	--------

CE/UKCA/UL-compliance List .....	p. 128
----------------------------------	--------

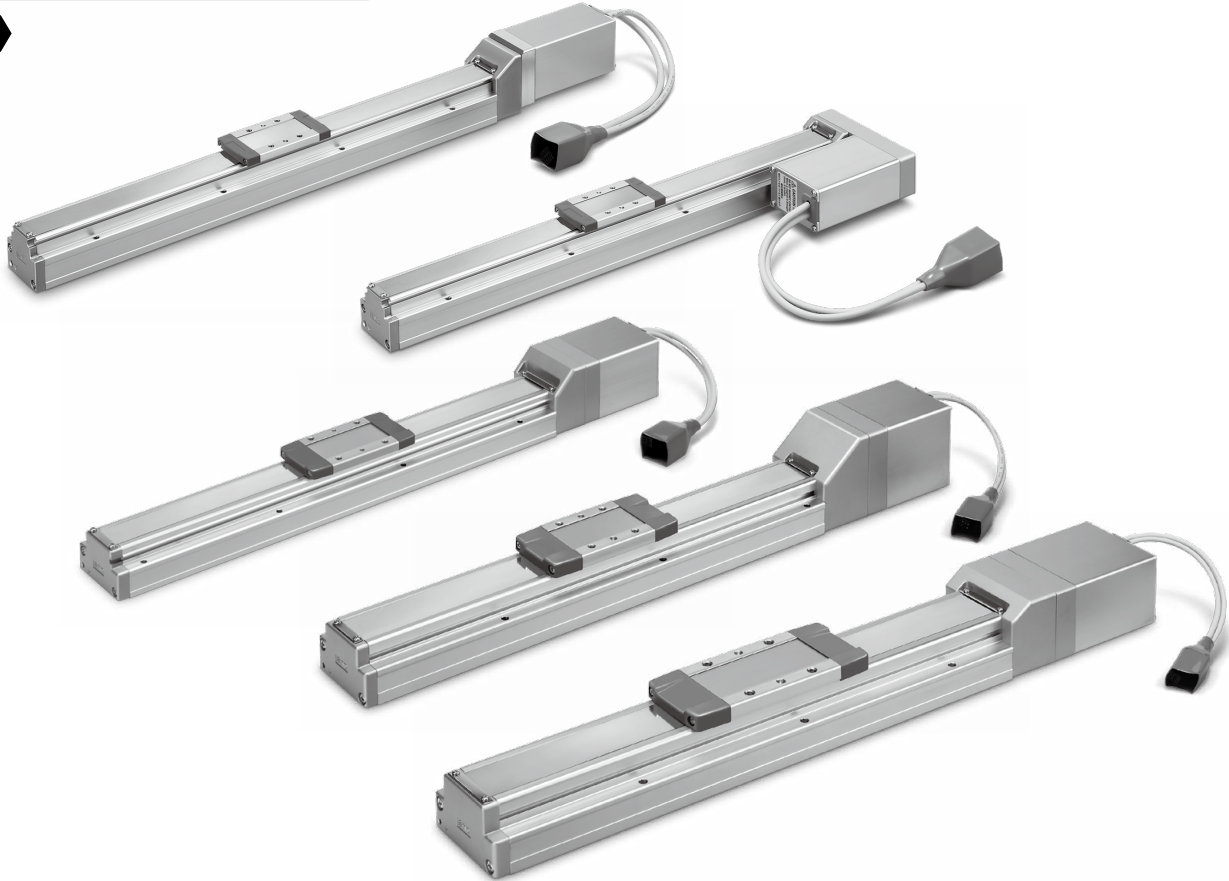
# Electric Actuator

## High Rigidity and High Precision Slider Type

### Slider Type *LEKFS Series*

Battery-less Absolute (Step Motor 24 VDC)

p. 37



AC Servo Motor

p. 50



Controllers p. 78

AC Servo Motor Drivers p. 96

Model Selection

Battery-less Absolute

LEKFS

AC Servo Motor

LEKFS

Auto Switch

JXC51/61

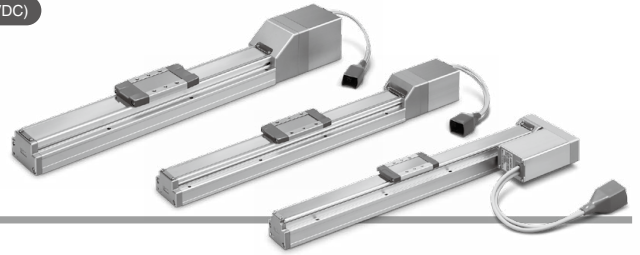
JXC

LECSA  
LECS -T

LECYM  
LECYU

Specific Product  
Precautions

# Model Selection



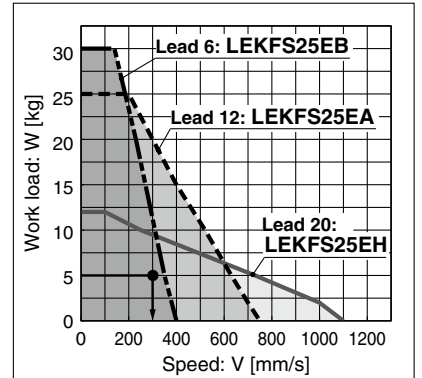
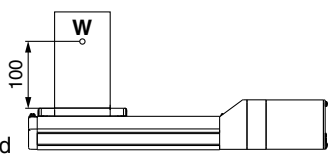
## Selection Procedure



## Selection Example

### Operating conditions

- Workpiece mass: 5 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s<sup>2</sup>]
- Stroke: 200 [mm]
- Mounting orientation: Horizontal upward
- Workpiece mounting condition:



<Speed-Work load graph>  
(LEKFS25/Step motor)

### Step 1 Check the work load-speed. <Speed-Work load graph> (pages 22, 23)

Select a model based on the workpiece mass and speed while referencing the speed-work load graph.  
Selection example) The **LEKFS25EB-200** can be temporarily selected as a possible candidate based on the graph shown on the right side.

### Step 2 Check the cycle time.

Calculate the **cycle time** using the following calculation method.

#### Cycle time:

T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be found by the following equation.

$$T1 = V/a1 \text{ [s]} \quad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as motor types, load and in position of the step data. Therefore, calculate the settling time while referencing the following value.

$$T4 = 0.2 \text{ [s]}$$

Calculation example)

T1 to T4 can be calculated as follows.

$$T1 = V/a1 = 300/3000 = 0.1 \text{ [s]}$$

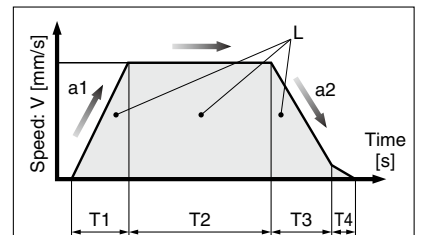
$$T3 = V/a2 = 300/3000 = 0.1 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.57 \text{ [s]}$$

$$T4 = 0.2 \text{ [s]}$$

The **cycle time** can be found as follows.

$$T = T1 + T2 + T3 + T4 = 0.1 + 0.57 + 0.1 + 0.2 = 0.97 \text{ [s]}$$



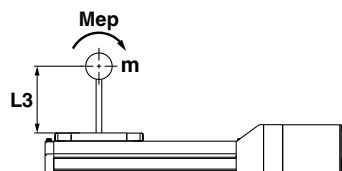
- L : Stroke [mm] ... (Operating condition)
- V : Speed [mm/s] ... (Operating condition)
- a1: Acceleration [mm/s<sup>2</sup>] ... (Operating condition)
- a2: Deceleration [mm/s<sup>2</sup>] ... (Operating condition)

- T1: Acceleration time [s]  
Time until reaching the set speed
- T2: Constant speed time [s]  
Time while the actuator is operating at a constant speed
- T3: Deceleration time [s]  
Time from the beginning of the constant speed operation to stop
- T4: Settling time [s]  
Time until positioning is completed

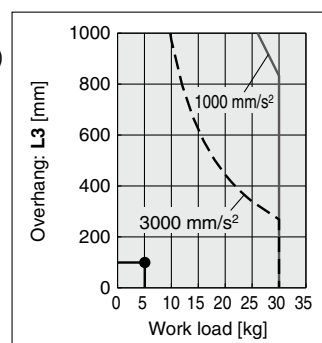
### Step 3 Check the allowable moment. <Static allowable moment> (page 26)

#### <Dynamic allowable moment> (pages 24, 25)

Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.



Based on the above calculation result, the **LEKFS25EB-200** should be selected.



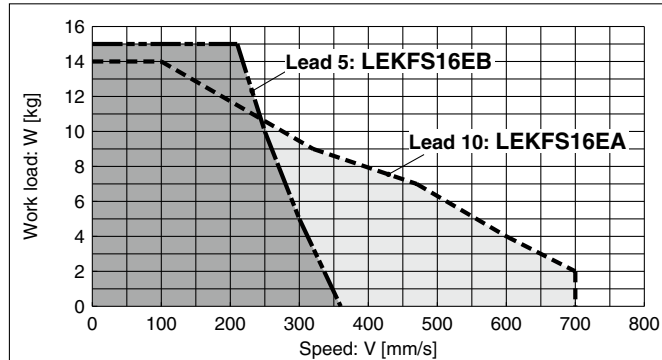
\* If the step motor and servo motors do not meet your specifications, also consider the AC servo specification.

## Speed-Work Load Graph (Guide)

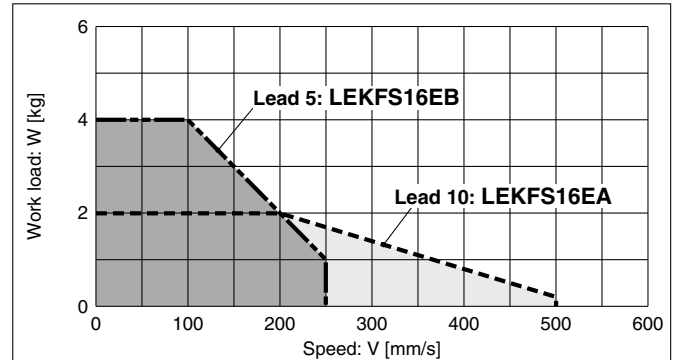
For Battery-less Absolute (Step Motor 24 VDC), In-line Motor Type \* The following graphs show the values when the moving force is 100%.

### LEKFS16/Ball Screw Drive

#### Horizontal

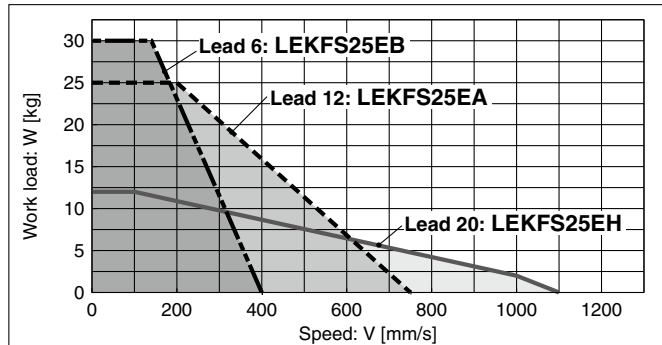


#### Vertical

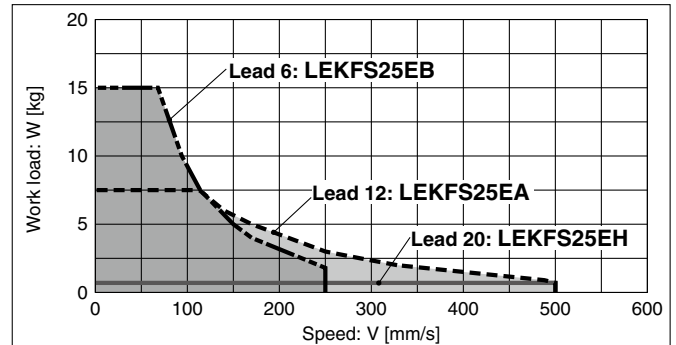


### LEKFS25/Ball Screw Drive

#### Horizontal

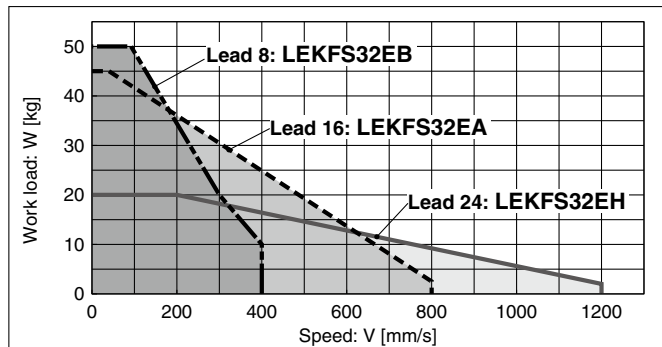


#### Vertical

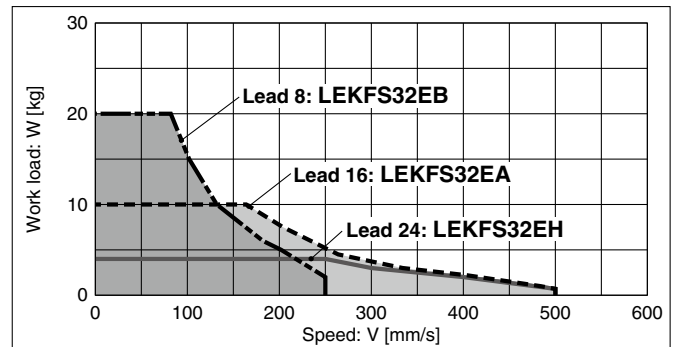


### LEKFS32/Ball Screw Drive

#### Horizontal

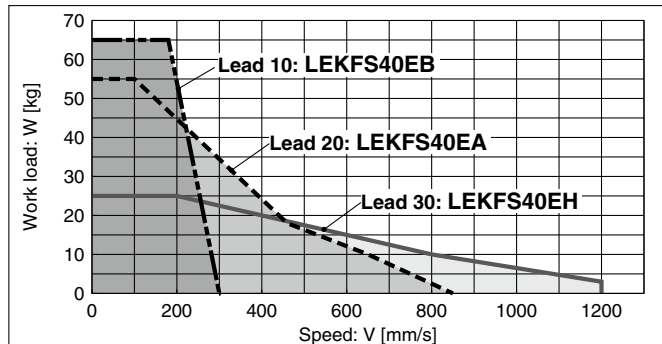


#### Vertical

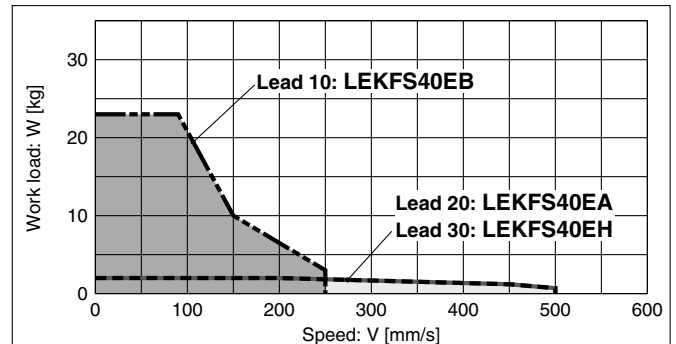


### LEKFS40/Ball Screw Drive

#### Horizontal



#### Vertical



Model Selection

Battery-less Absolute

LEKFS

AC Servo Motor

LEKFS

Auto Switch

JXC51/61

JXC

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product  
Precautions

# LEKFS Series

Battery-less Absolute (Step Motor 24 VDC)

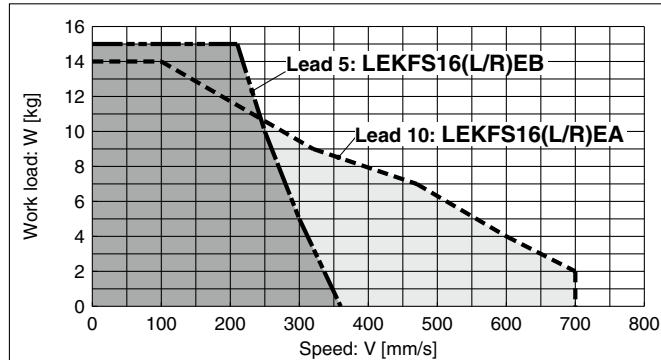
## Speed-Work Load Graph (Guide)

For Battery-less Absolute (Step Motor 24 VDC), Parallel Motor Type

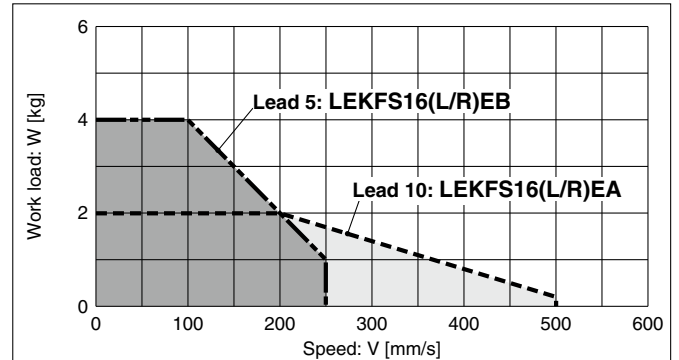
\* The following graphs show the values when the moving force is 100%.

### LEKFS16(L/R)/Ball Screw Drive

#### Horizontal

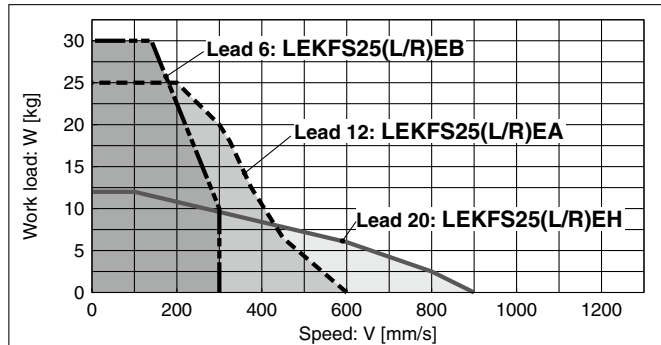


#### Vertical

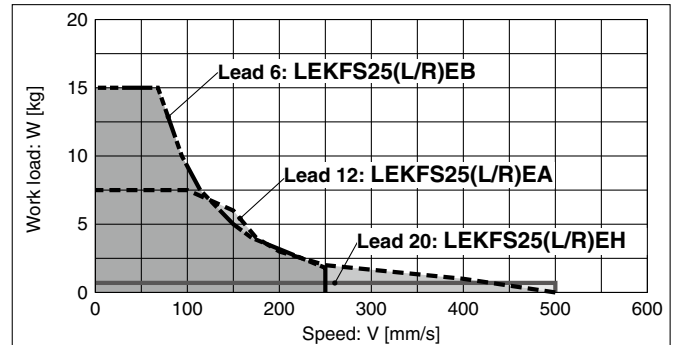


### LEKFS25(L/R)/Ball Screw Drive

#### Horizontal

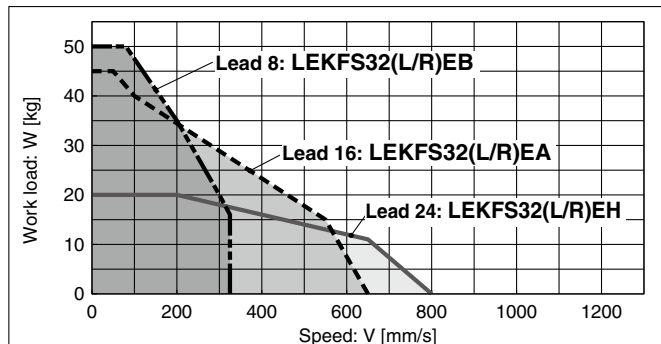


#### Vertical

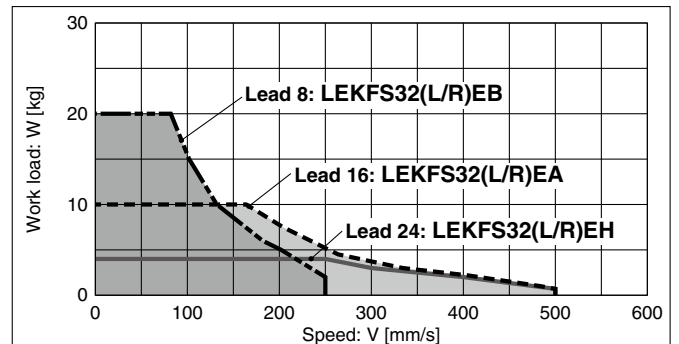


### LEKFS32(L/R)/Ball Screw Drive

#### Horizontal

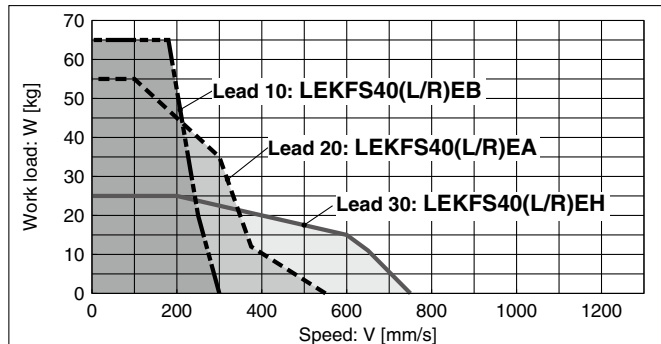


#### Vertical

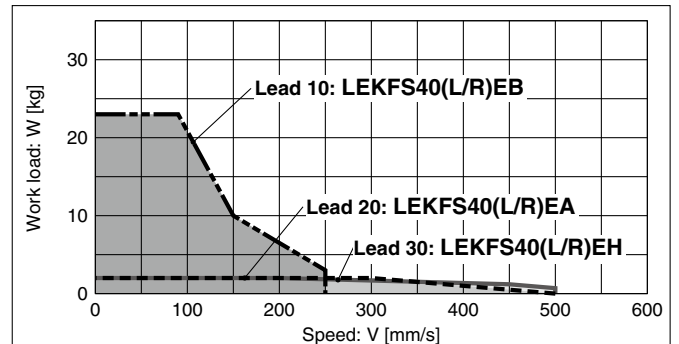


### LEKFS40(L/R)/Ball Screw Drive

#### Horizontal



#### Vertical

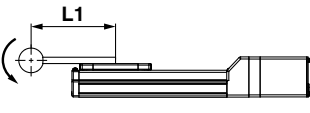
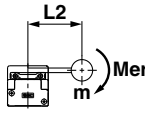
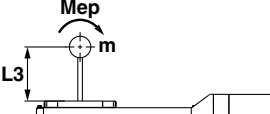
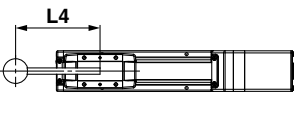
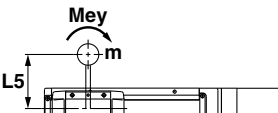
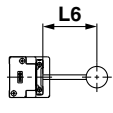




## Dynamic Allowable Moment

\* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the "Calculation of Guide Load Factor" or the Electric Actuator Model Selection Software for confirmation: <https://www.smcworld.com>

Acceleration/Deceleration ——— 1000 mm/s<sup>2</sup> - - - 3000 mm/s<sup>2</sup>

Orientation		Model			
Load overhanging direction m : Work load [kg] Me: Allowable moment [N·m] L : Overhang to the work load center of gravity [mm]		LEKFS16	LEKFS25	LEKFS32	LEKFS40
Horizontal/Bottom	 <p><b>X</b></p>				
	 <p><b>Y</b></p>				
	 <p><b>Z</b></p> <p>* Acceleration/deceleration of LEKF32 and LEKF40: Calculate the overhang for the work load at 1000 mm/s<sup>2</sup> based on the model selection software.</p>				
Wall	 <p><b>X</b></p>				
	 <p><b>Y</b></p> <p>* Acceleration/deceleration of LEKF32 and LEKF40: Calculate the overhang for the work load at 1000 mm/s<sup>2</sup> based on the model selection software.</p>				
	 <p><b>Z</b></p>				

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product  
Precautions

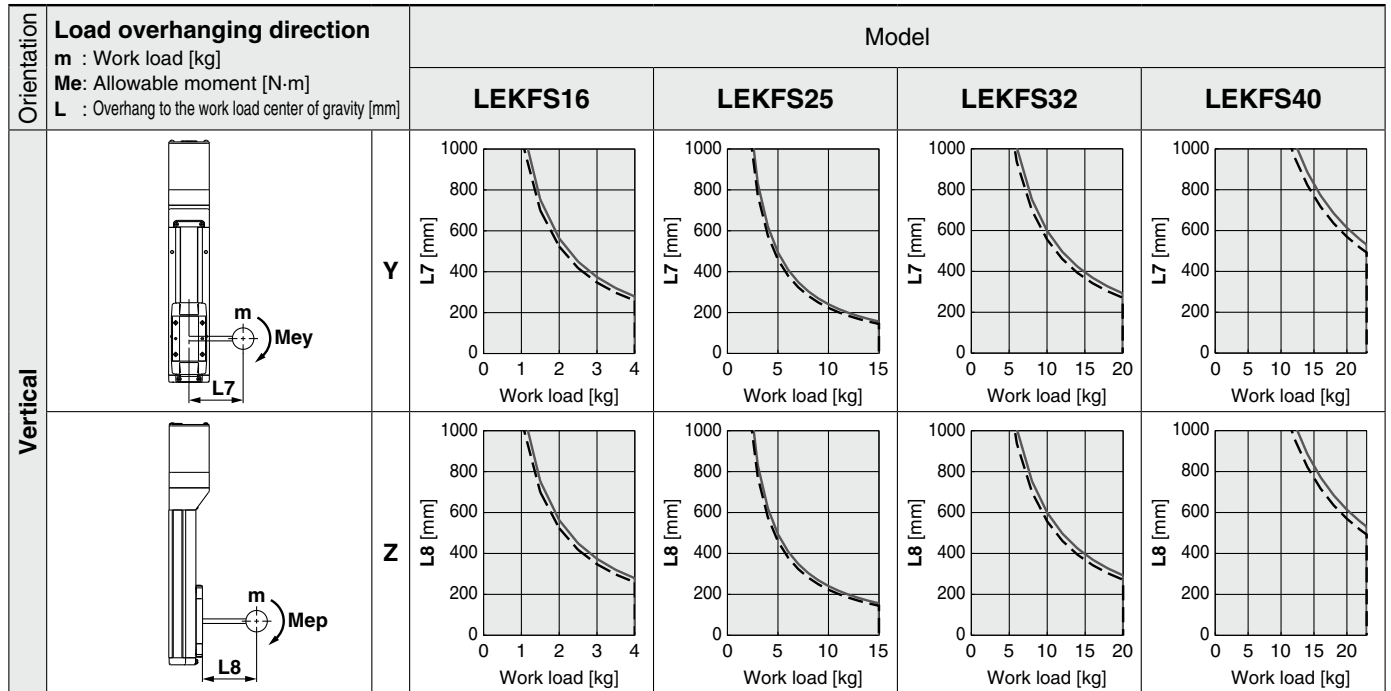
# LEKFS Series

Battery-less Absolute (Step Motor 24 VDC)

\* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the "Calculation of Guide Load Factor" or the Electric Actuator Model Selection Software for confirmation: <https://www.smcworld.com>

## Dynamic Allowable Moment

Acceleration/Deceleration ——— 1000 mm/s<sup>2</sup> - - - 3000 mm/s<sup>2</sup>



## Calculation of Guide Load Factor

- Decide operating conditions.

Model: LEKFS

Size: 25/32/40

Acceleration [mm/s<sup>2</sup>]: a

Work load [kg]: m

Mounting orientation: Horizontal/Bottom/Wall/Vertical

Work load center position [mm]: Xc/Yc/Zc

- Select the target graph while referencing the model, size, and mounting orientation.

- Based on the acceleration and work load, find the overhang [mm]: Lx/Ly/Lz from the graph.

- Calculate the load factor for each direction.

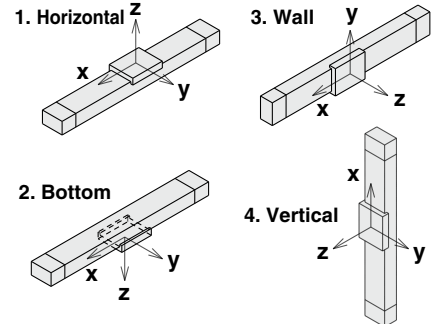
$$\alpha_x = X_c/L_x, \alpha_y = Y_c/L_y, \alpha_z = Z_c/L_z$$

- Confirm the total of  $\alpha_x$ ,  $\alpha_y$ , and  $\alpha_z$  is 1 or less.

$$\alpha_x + \alpha_y + \alpha_z \leq 1$$

When 1 is exceeded, please consider a reduction of acceleration and work load, or a change of the work load center position and series.

### Mounting orientation



### Example

- Operating conditions

Model: LEKFS40

Size: 40

Mounting orientation: Horizontal

Acceleration [mm/s<sup>2</sup>]: 3000

Work load [kg]: 20

Work load center position [mm]: Xc = 0, Yc = 50, Zc = 200

- Select the graphs for horizontal of the LEKFS40 on page 24.

- Lx = 570 mm, Ly = 400 mm, Lz = 1000 mm

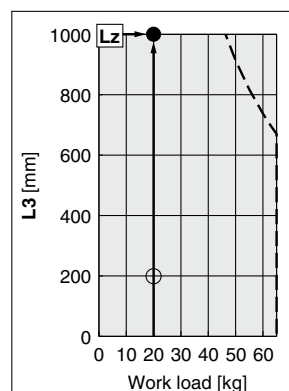
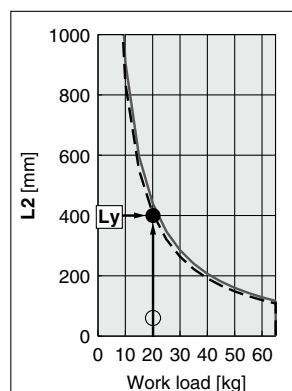
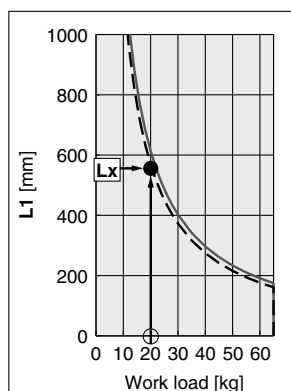
- The load factor for each direction can be found as follows.

$$\alpha_x = 0/570 = 0$$

$$\alpha_y = 50/400 = 0.125$$

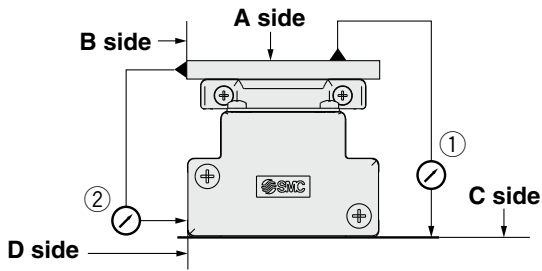
$$\alpha_z = 200/1000 = 0.2$$

- $\alpha_x + \alpha_y + \alpha_z = 0.325 \leq 1$



\* Acceleration/deceleration of LEKFS32 and LEKFS40: Calculate the overhang for the work load at 1000 mm/s<sup>2</sup> based on the model selection software.

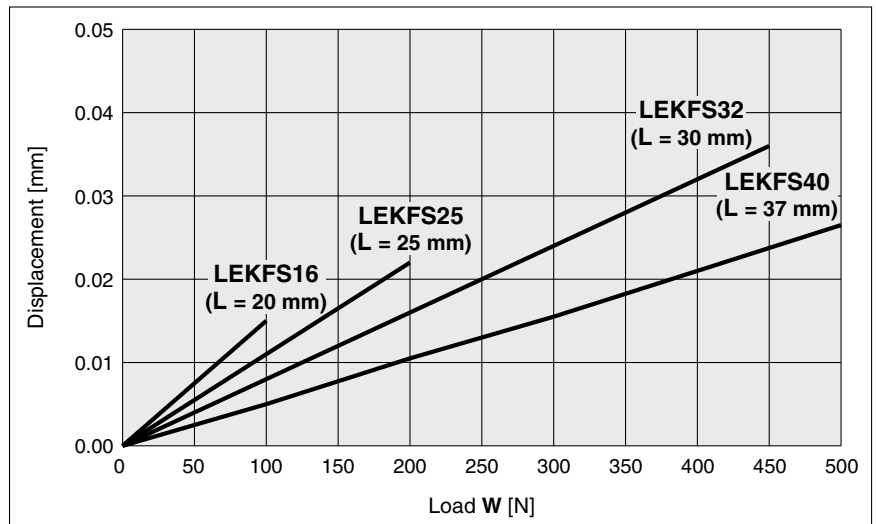
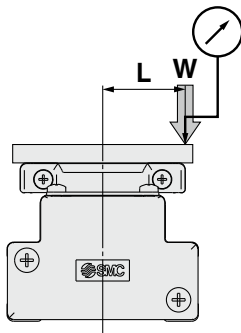
## Table Accuracy (Reference Value)



Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEKFS16	0.04	0.02
LEKFS25	0.04	0.02
LEKFS32	0.04	0.02
LEKFS40	0.04	0.02

\* Traveling parallelism does not include the mounting surface accuracy.

## Table Displacement (Reference Value)



\* This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.

## Static Allowable Moment\*1

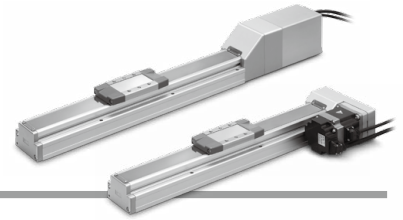
Model	LEKFS16	LEKFS25	LEKFS32	LEKFS40
Pitching [N·m]	20	61	141	264
Yawing [N·m]	20	70	141	264
Rolling [N·m]	35	115	290	473

\*1 The static allowable moment is the amount of static moment which can be applied to the actuator when it is stopped.  
If the product is exposed to impact or repeated load, be sure to take adequate safety measures when using the product.

# Model Selection

LEKFS Series ▶ p. 50

LECY Series ▶ p. 60



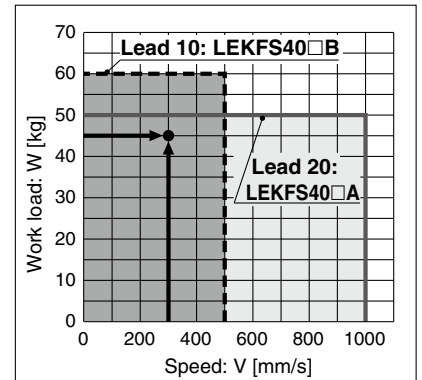
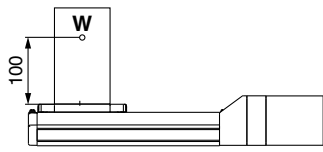
## Selection Procedure



## Selection Example

### Operating conditions

- Workpiece mass: 45 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s<sup>2</sup>]
- Stroke: 200 [mm]
- Mounting position: Horizontal upward
- Workpiece mounting condition:



<Speed-Work load graph> (LEKFS40)

### Step 1 Check the work load-speed. <Speed-Work load graph> (page 28)

Select a model based on the workpiece mass and speed while referencing the speed-work load graph.  
 Selection example) The LEKFS40S4B-200 can be temporarily selected as a possible candidate based on the graph shown on the right side.

### Step 2 Check the cycle time.

Calculate the cycle time using the following calculation method.

#### Cycle time:

T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be found by the following equation.

$$T1 = V/a1 \text{ [s]} \quad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the motor type and load. The value below is recommended.

$$T4 = 0.05 \text{ [s]}$$

Calculation example)  
 T1 to T4 can be calculated as follows.

$$T1 = V/a1 = 300/3000 = 0.1 \text{ [s]}$$

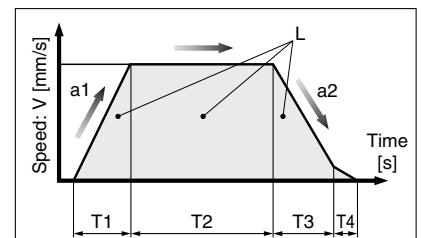
$$T3 = V/a2 = 300/3000 = 0.1 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.57 \text{ [s]}$$

$$T4 = 0.05 \text{ [s]}$$

The cycle time can be found as follows.

$$T = T1 + T2 + T3 + T4 = 0.1 + 0.57 + 0.1 + 0.05 = 0.82 \text{ [s]}$$

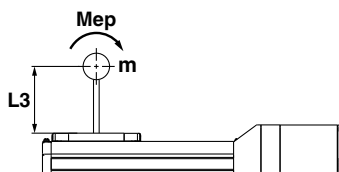


- L : Stroke [mm] ... (Operating condition)
- V : Speed [mm/s] ... (Operating condition)
- a1 : Acceleration [mm/s<sup>2</sup>] ... (Operating condition)
- a2 : Deceleration [mm/s<sup>2</sup>] ... (Operating condition)

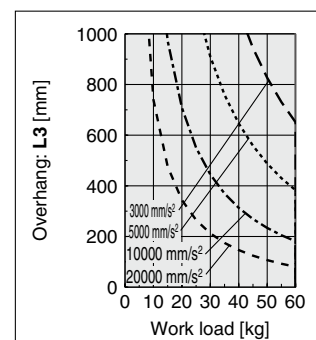
- T1: Acceleration time [s]  
Time until reaching the set speed
- T2: Constant speed time [s]  
Time while the actuator is operating at a constant speed
- T3: Deceleration time [s]  
Time from the beginning of the constant speed operation to stop
- T4: Settling time [s]  
Time until positioning is completed

### Step 3 Check the allowable moment. <Static allowable moment> (page 34) <Dynamic allowable moment> (pages 32, 33)

Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.



Based on the above calculation result, the LEKFS40S4B-200 should be selected.

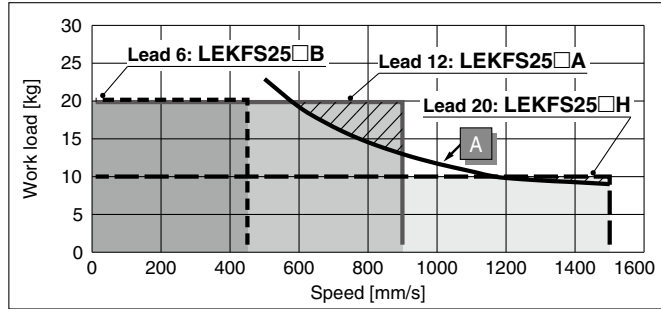


## Speed-Work Load Graph/Required Conditions for the Regeneration Option (Guide)

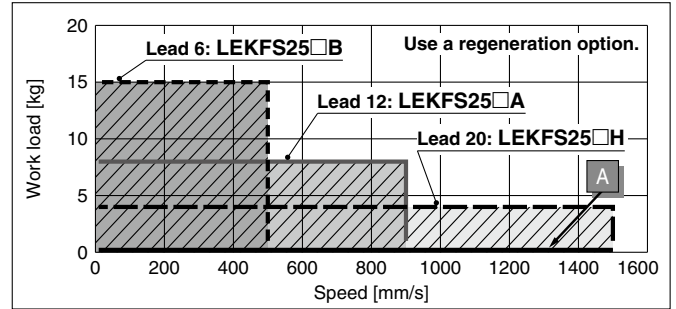
\* The allowable speed is restricted depending on the stroke.  
Select it by referring to the "Allowable Stroke Speed" below.

### LEKFS25/Ball Screw Drive

#### Horizontal

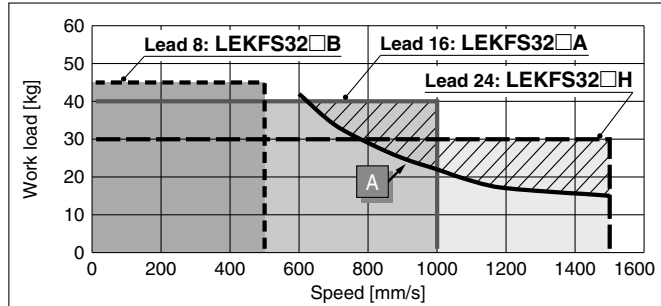


#### Vertical

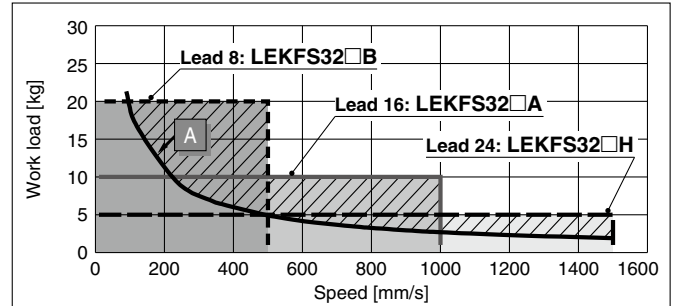


### LEKFS32/Ball Screw Drive

#### Horizontal

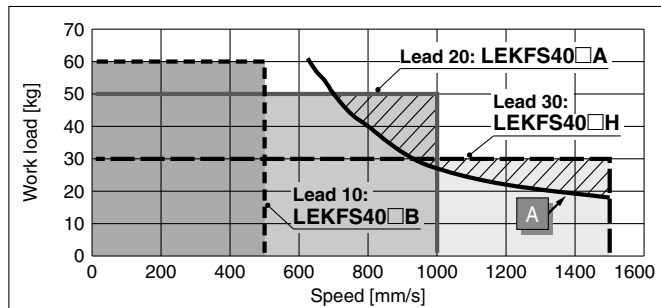


#### Vertical

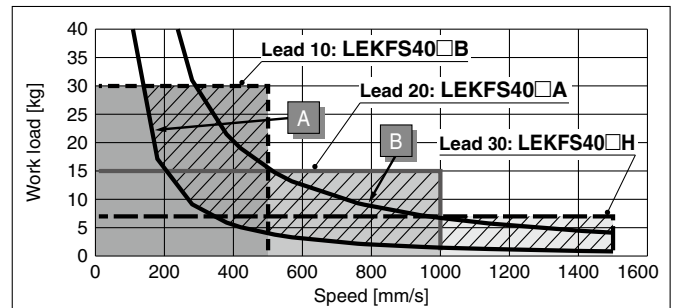


### LEKFS40/Ball Screw Drive

#### Horizontal



#### Vertical



#### Required conditions for the regeneration option

\* The regeneration option is required when using the product above the regeneration line in the graph. (It must be ordered separately.)

#### Regeneration Option Models

Operating condition	Model
<b>A</b>	LEC-MR-RB-032
<b>B</b>	LEC-MR-RB-12

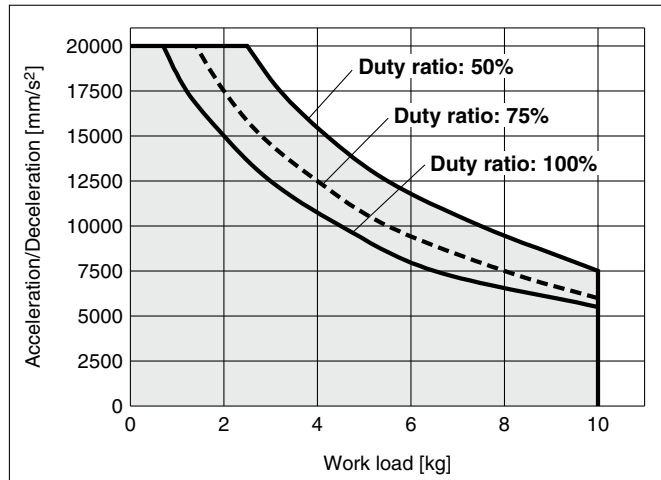
### Allowable Stroke Speed

Model	AC servo motor	Lead		Stroke [mm]					
		Symbol	[mm]	Up to 100	Up to 200	Up to 300	Up to 400	Up to 500	Up to 600
LEKFS25	100 W□40	H	20			1500		1200	—
		A	12			900		720	—
		B	6			450		360	—
		(Motor rotation speed)				(4500 rpm)			(3650 rpm)
LEKFS32	200 W□60	H	24			1500			—
		A	16			1000			—
		B	8			500			—
		(Motor rotation speed)				(3750 rpm)			
LEKFS40	400 W□60	H	30	—			1500		
		A	20	—			1000		
		B	10	—			500		
		(Motor rotation speed)					(3000 rpm)		

## Work Load–Acceleration/Deceleration Graph (Guide)

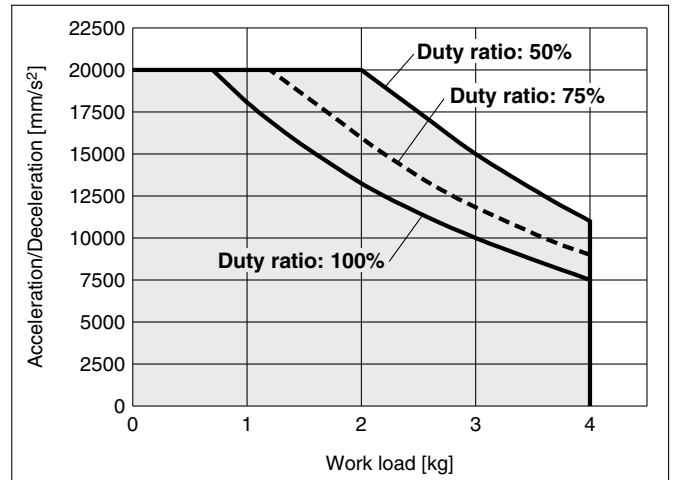
### LEKFS25□□H/Ball Screw Drive

Horizontal



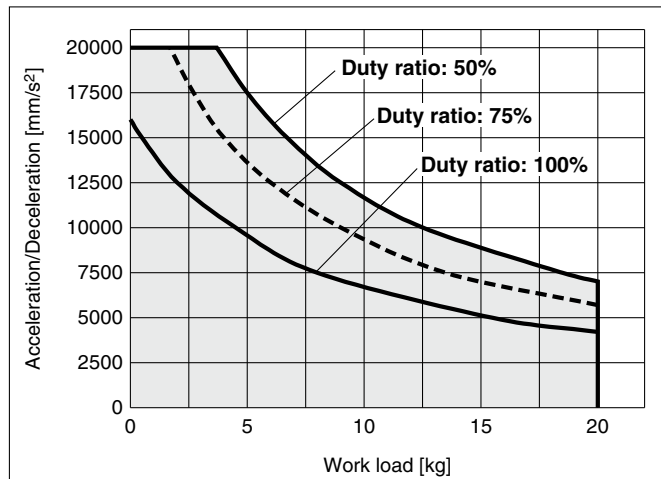
### LEKFS25□□H/Ball Screw Drive

Vertical



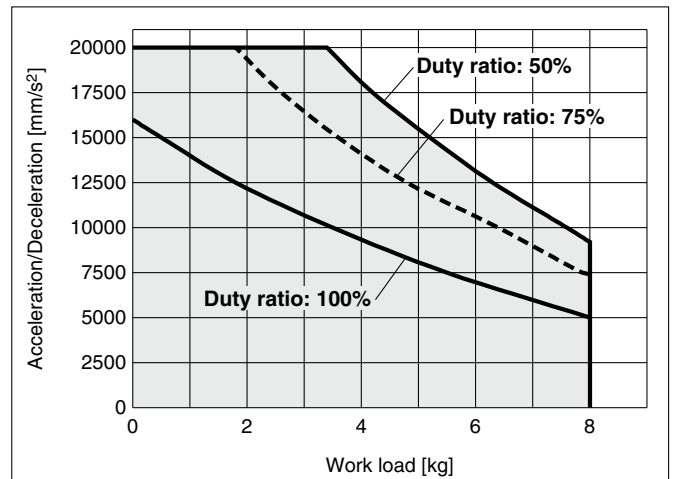
### LEKFS25□□A/Ball Screw Drive

Horizontal



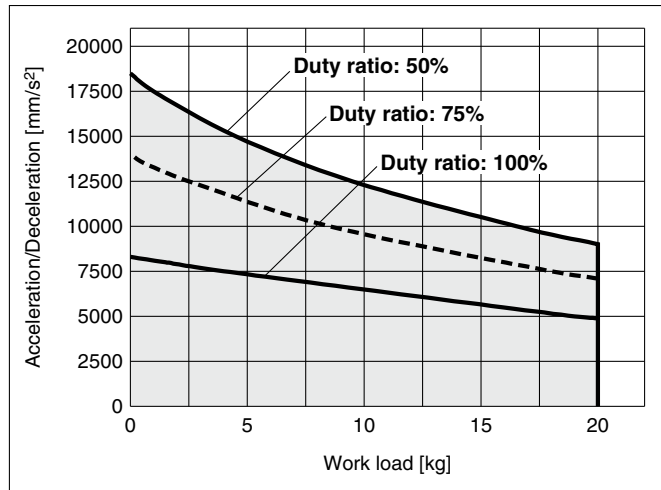
### LEKFS25□□A/Ball Screw Drive

Vertical



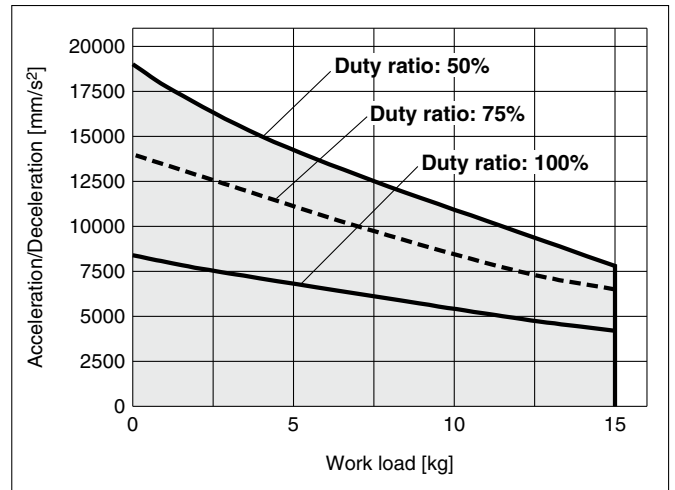
### LEKFS25□□B/Ball Screw Drive

Horizontal



### LEKFS25□□B/Ball Screw Drive

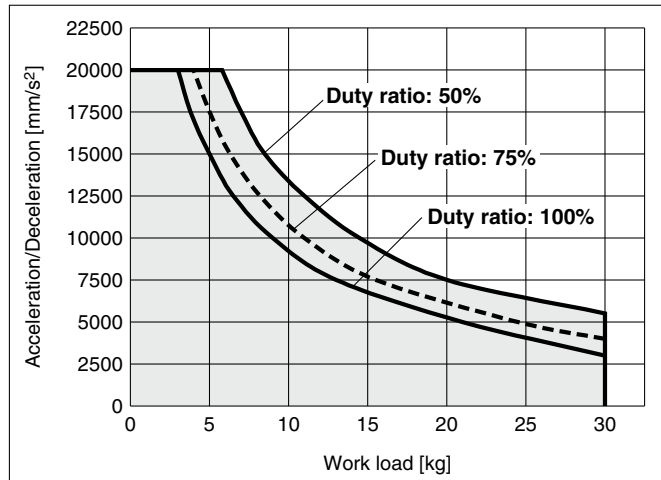
Vertical



**Work Load–Acceleration/Deceleration Graph (Guide)**

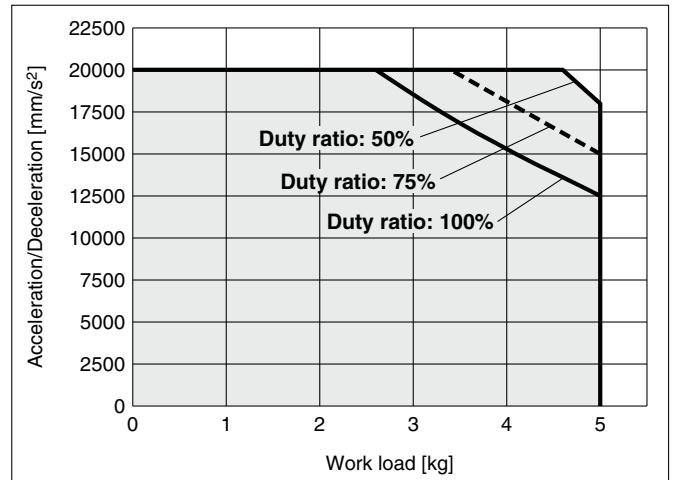
**LEKFS32□□H/Ball Screw Drive**

Horizontal



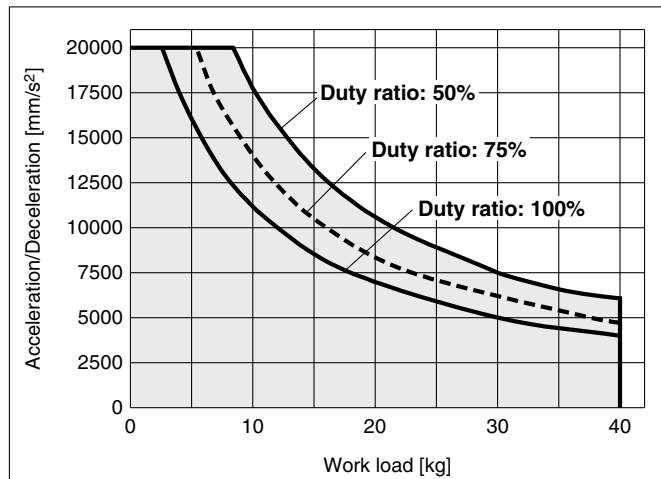
**LEKFS32□□H/Ball Screw Drive**

Vertical



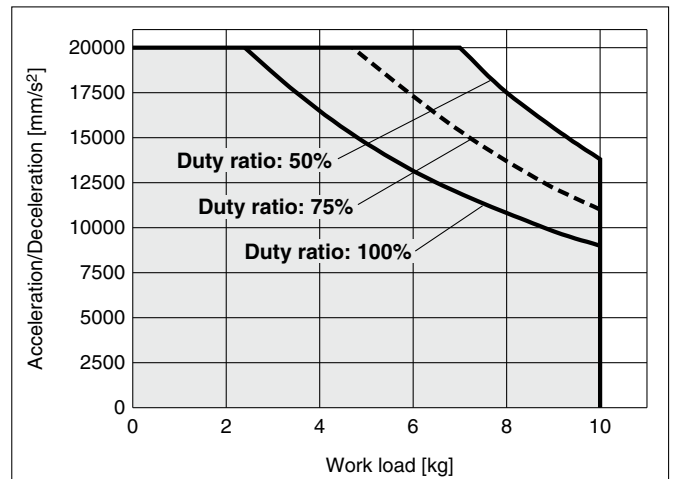
**LEKFS32□□A/Ball Screw Drive**

Horizontal



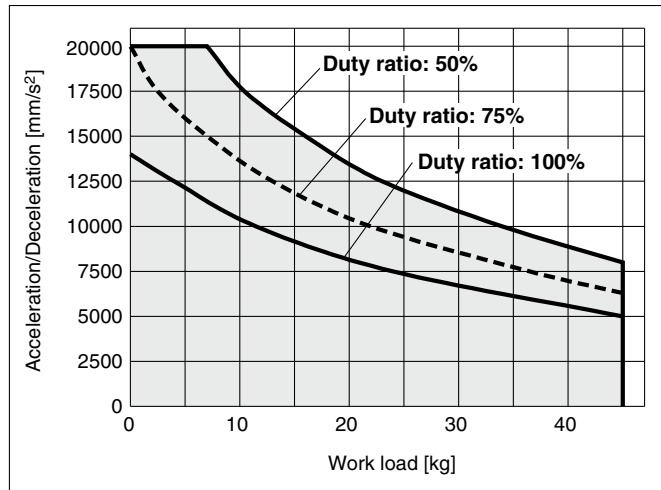
**LEKFS32□□A/Ball Screw Drive**

Vertical



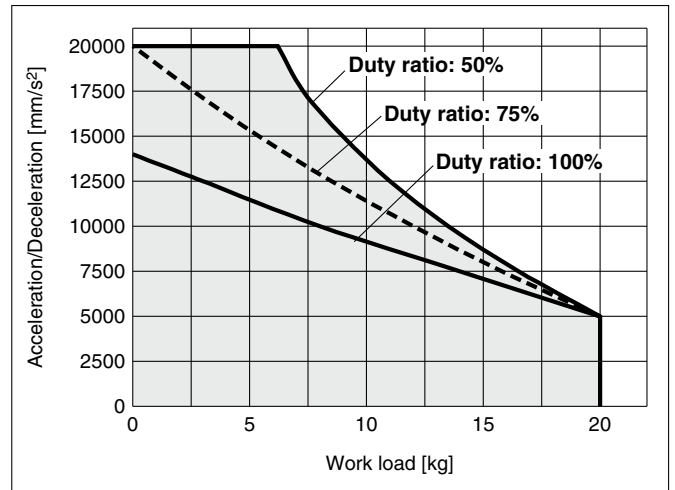
**LEKFS32□□B/Ball Screw Drive**

Horizontal



**LEKFS32□□B/Ball Screw Drive**

Vertical



Model Selection

Battery-less Absolute

LEKFS

AC Servo Motor

LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

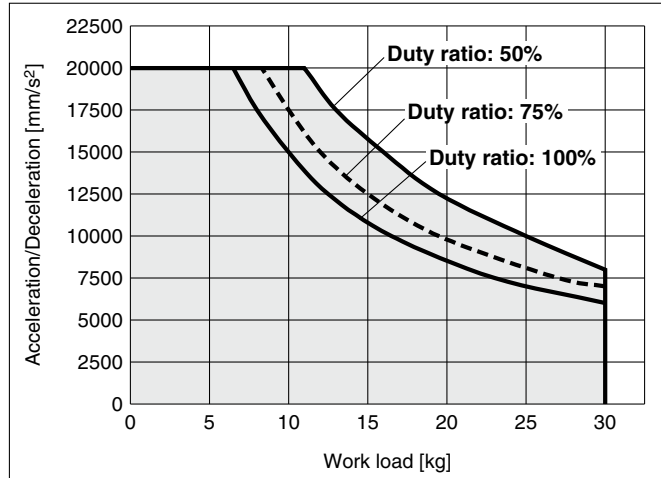
LECYM  
LECYU

Specific Product  
Precautions

## Work Load–Acceleration/Deceleration Graph (Guide)

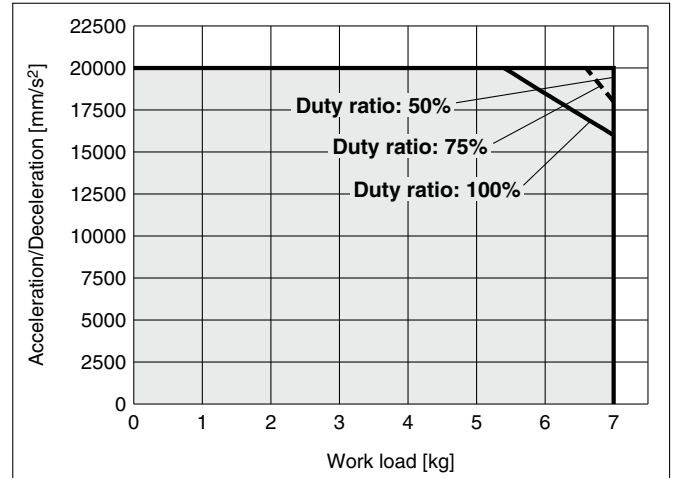
### LEKFS40□□H/Ball Screw Drive

Horizontal



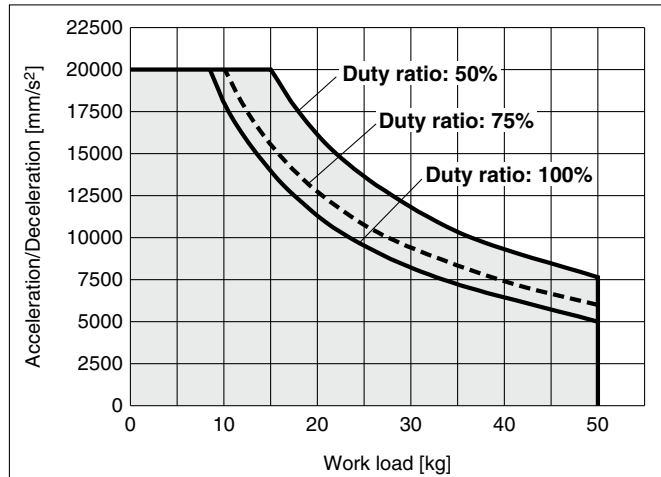
### LEKFS40□□H/Ball Screw Drive

Vertical



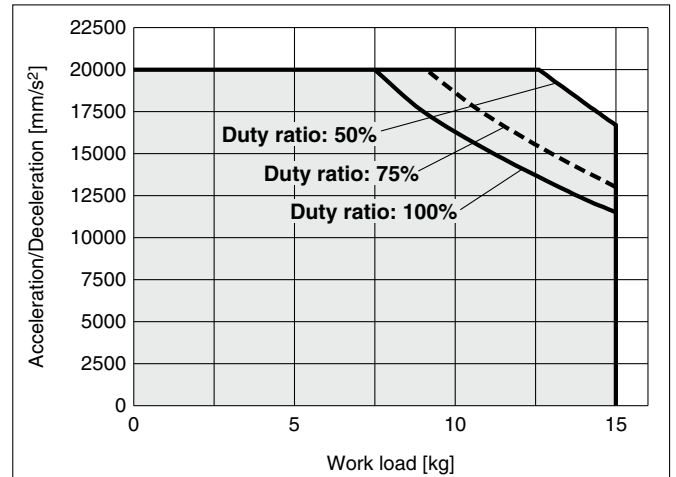
### LEKFS40□□A/Ball Screw Drive

Horizontal



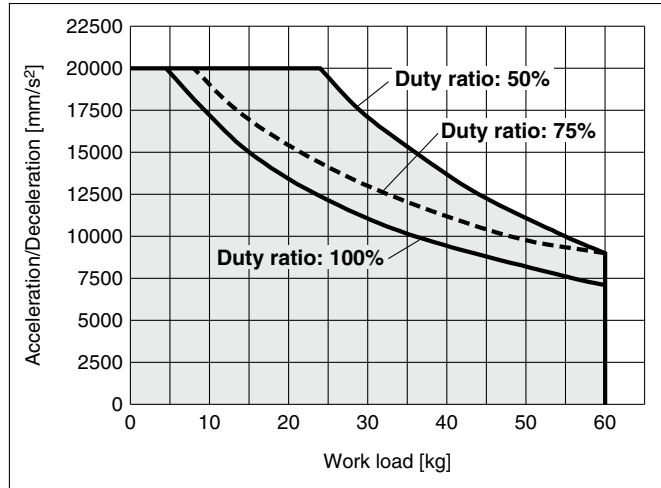
### LEKFS40□□A/Ball Screw Drive

Vertical



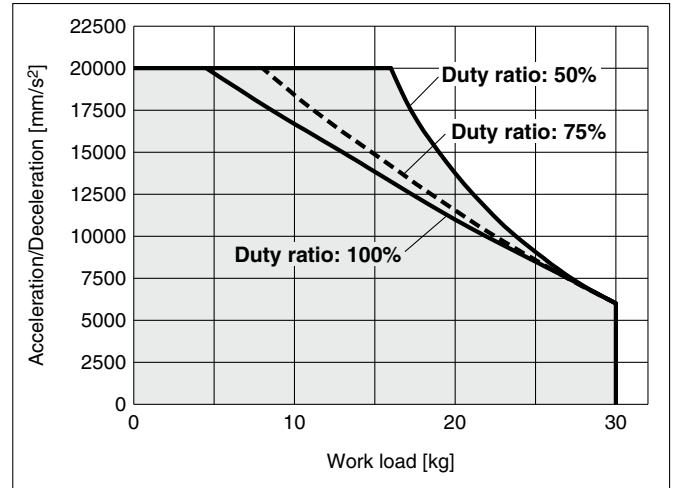
### LEKFS40□□B/Ball Screw Drive

Horizontal



### LEKFS40□□B/Ball Screw Drive

Vertical





## Dynamic Allowable Moment

\* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the "Calculation of Guide Load Factor" or the Electric Actuator Model Selection Software for confirmation: <https://www.smcworld.com>

Acceleration/Deceleration — 1000 mm/s<sup>2</sup> - - - 3000 mm/s<sup>2</sup> ..... 5000 mm/s<sup>2</sup> - - - - 10000 mm/s<sup>2</sup> - - - - 20000 mm/s<sup>2</sup>

Orientation		Model		
Load overhanging direction m : Work load [kg] Me: Allowable moment [N·m] L : Overhang to the work load center of gravity [mm]		LEKFS25	LEKFS32	LEKFS40
Horizontal/Bottom	X 			
	Y 			
	Z  * Acceleration/deceleration of LEKFS25, LEKFS32, and LEKFS40: Calculate the overhang for the work load at 1000 mm/s <sup>2</sup> based on the model selection software.			
Wall	X  * Acceleration/deceleration of LEKFS25, LEKFS32, and LEKFS40: Calculate the overhang for the work load at 1000 mm/s <sup>2</sup> based on the model selection software.			
	Y 			
	Z 			

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC

LECSA  
LECS-T

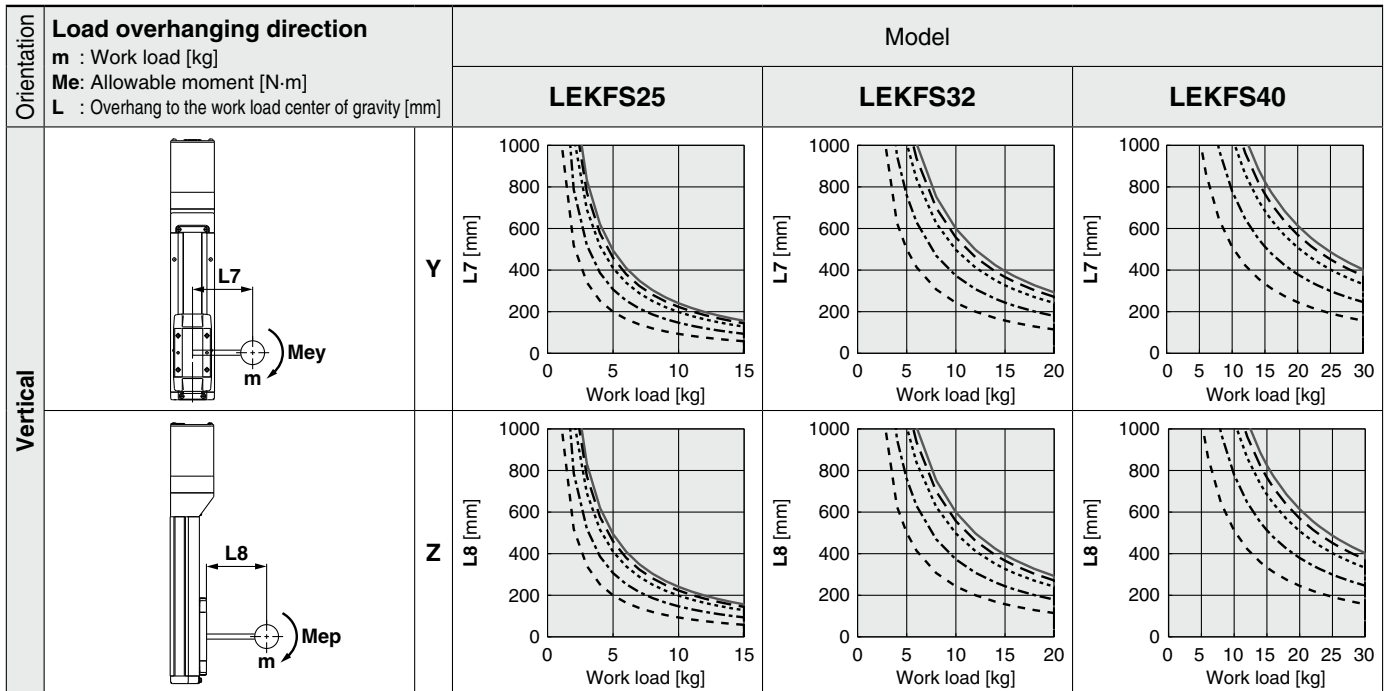
LECYM  
LECYU

Specific Product  
Precautions

\* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the "Calculation of Guide Load Factor" or the Electric Actuator Model Selection Software for confirmation: <https://www.smcworld.com>

## Dynamic Allowable Moment

Acceleration/Deceleration ——— 1000 mm/s<sup>2</sup>    - - - 3000 mm/s<sup>2</sup>    ..... 5000 mm/s<sup>2</sup>    - - - - 10000 mm/s<sup>2</sup>    - - - - 20000 mm/s<sup>2</sup>



## Calculation of Guide Load Factor

- Decide operating conditions.

Model: LEKFS

Size: 25/32/40

Mounting orientation: Horizontal/Bottom/Wall/Vertical

Acceleration [mm/s<sup>2</sup>]: a

Work load [kg]: m

Work load center position [mm]: Xc/Yc/Zc

- Select the target graph while referencing the model, size, and mounting orientation.

- Based on the acceleration and work load, find the overhang [mm]: Lx/Ly/Lz from the graph.

- Calculate the load factor for each direction.

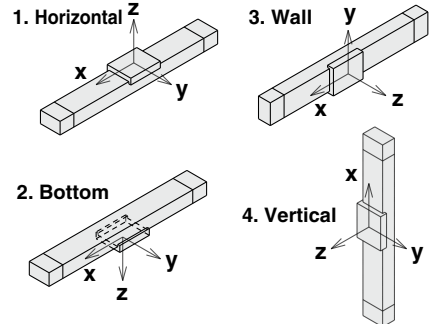
$$\alpha_x = X_c/L_x, \alpha_y = Y_c/L_y, \alpha_z = Z_c/L_z$$

- Confirm the total of  $\alpha_x$ ,  $\alpha_y$ , and  $\alpha_z$  is 1 or less.

$$\alpha_x + \alpha_y + \alpha_z \leq 1$$

When 1 is exceeded, please consider a reduction of acceleration and work load, or a change of the work load center position and series.

### Mounting orientation



### Example

- Operating conditions

Model: LEKFS40

Size: 40

Mounting orientation: Horizontal

Acceleration [mm/s<sup>2</sup>]: 3000

Work load [kg]: 20

Work load center position [mm]: Xc = 0, Yc = 50, Zc = 200

- Select the graphs for horizontal of the LEKFS40 on page 32.

- Lx = 560 mm, Ly = 400 mm, Lz = 1000 mm

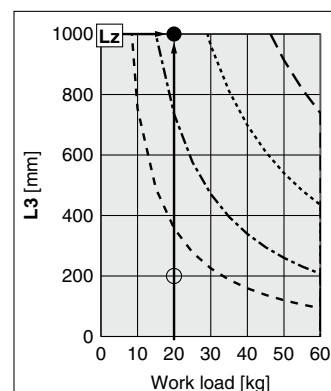
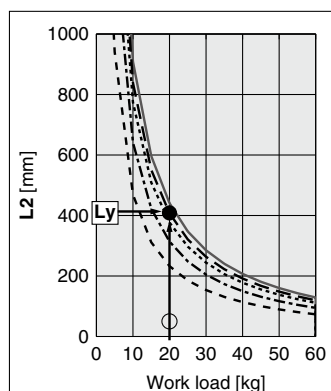
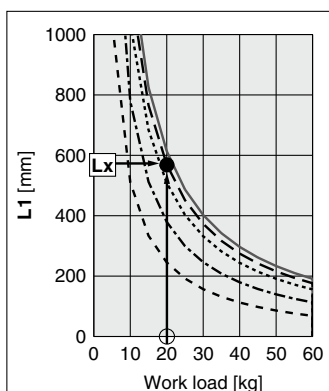
- The load factor for each direction can be found as follows.

$$\alpha_x = 0/560 = 0$$

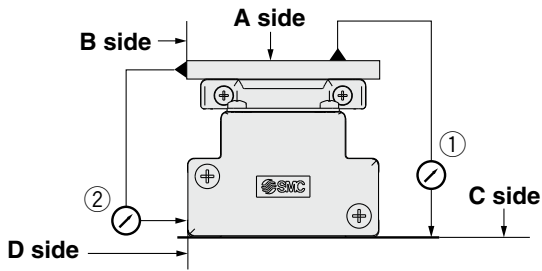
$$\alpha_y = 50/400 = 0.13$$

$$\alpha_z = 200/1000 = 0.2$$

- $\alpha_x + \alpha_y + \alpha_z = 0.33 \leq 1$



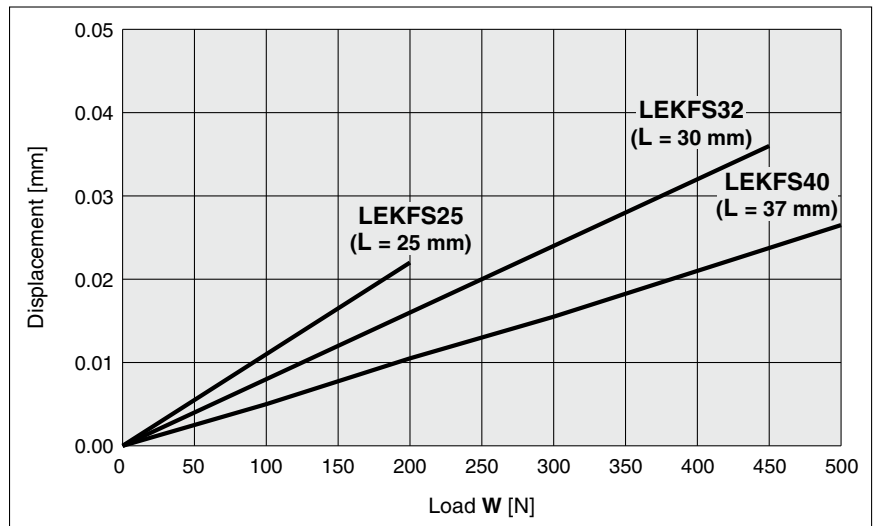
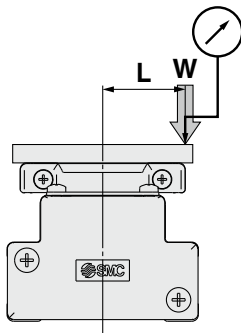
### Table Accuracy (Reference Value)



Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEKFS25	0.04	0.02
LEKFS32	0.04	0.02
LEKFS40	0.04	0.02

\* Traveling parallelism does not include the mounting surface accuracy.

### Table Displacement (Reference Value)



\* This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.

### Static Allowable Moment\*1

Model	LEKFS25	LEKFS32	LEKFS40
Pitching [N·m]	61	141	264
Yawing [N·m]	70	141	264
Rolling [N·m]	115	290	473

\*1 The static allowable moment is the amount of static moment which can be applied to the actuator when it is stopped.  
If the product is exposed to impact or repeated load, be sure to take adequate safety measures when using the product.

Model Selection

Battery-less Absolute

LEKFS

AC Servo Motor

LEKFS

Auto Switch

JXC51/61

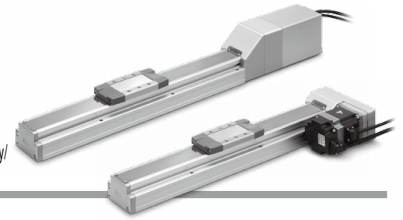
JXC

LECSA  
LECS-T

LECYM  
LECYU

Specific Product  
Precautions

# Model Selection



LECS Series ▶ p. 50    LEKFS Series ▶ p. 60

## Selection Procedure

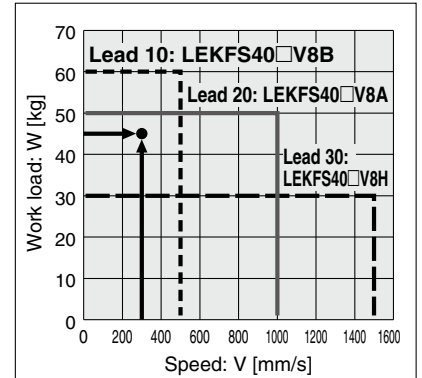
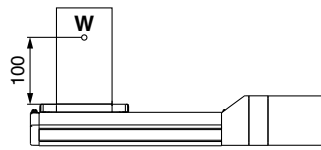
\* The Work Load-Acceleration/Deceleration Graph, Dynamic Allowable Moment, Calculation of Guide Load Factor, Table Accuracy/Displacement, and Static Allowable Moment are the same as those of the LECS AC servo motor. For details, refer to page 29 and onward.



## Selection Example

### Operating conditions

- Workpiece mass: 45 [kg]
  - Speed: 300 [mm/s]
  - Acceleration/Deceleration: 3000 [mm/s<sup>2</sup>]
  - Stroke: 200 [mm]
  - Mounting position: Horizontal upward
- Workpiece mounting condition:



### Step 1 Check the work load-speed. <Speed-Work load graph> (page 36)

Select a model based on the workpiece mass and speed while referencing the speed-work load graph.  
Selection example) The **LEKFS40V8B-200** can be temporarily selected as a possible candidate based on the graph shown on the right side.

### Step 2 Check the cycle time.

Calculate the **cycle time** using the following calculation method.

#### Cycle time:

T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be found by the following equation.

$$T1 = V/a1 \text{ [s]} \quad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the motor type and load. The value below is recommended.

$$T4 = 0.05 \text{ [s]}$$

Calculation example)  
T1 to T4 can be calculated as follows.

$$T1 = V/a1 = 300/3000 = 0.1 \text{ [s]}$$

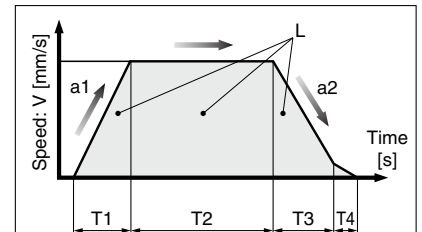
$$T3 = V/a2 = 300/3000 = 0.1 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.57 \text{ [s]}$$

$$T4 = 0.05 \text{ [s]}$$

The **cycle time** can be found as follows.

$$T = T1 + T2 + T3 + T4 = 0.1 + 0.57 + 0.1 + 0.05 = 0.82 \text{ [s]}$$



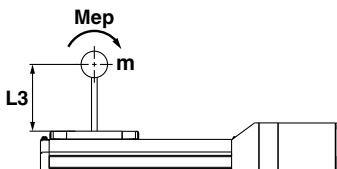
L : Stroke [mm] ... (Operating condition)  
V : Speed [mm/s] ... (Operating condition)  
a1 : Acceleration [mm/s<sup>2</sup>] ... (Operating condition)  
a2 : Deceleration [mm/s<sup>2</sup>] ... (Operating condition)

- T1: Acceleration time [s]  
Time until reaching the set speed
- T2: Constant speed time [s]  
Time while the actuator is operating at a constant speed
- T3: Deceleration time [s]  
Time from the beginning of the constant speed operation to stop
- T4: Settling time [s]  
Time until positioning is completed

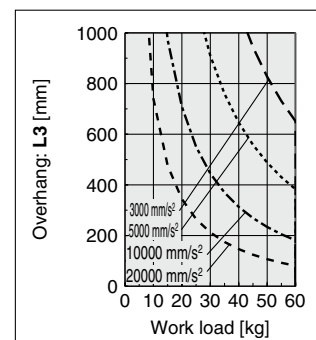
### Step 3 Check the allowable moment. <Static allowable moment> (page 34)

#### <Dynamic allowable moment> (pages 32, 33)

Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.



Based on the above calculation result, the **LEKFS40V8B-200** should be selected.

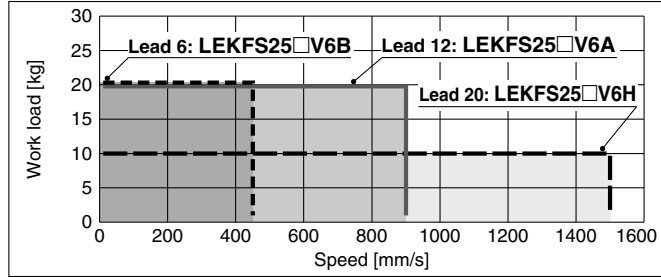


## Speed-Work Load Graph/Required Conditions for the Regenerative Resistor (Guide)

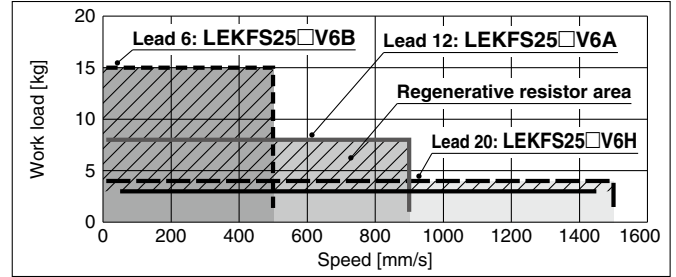
\* The allowable speed is restricted depending on the stroke.  
Select it by referring to the "Allowable Stroke Speed" below.

### LEKFS25/Ball Screw Drive

#### Horizontal

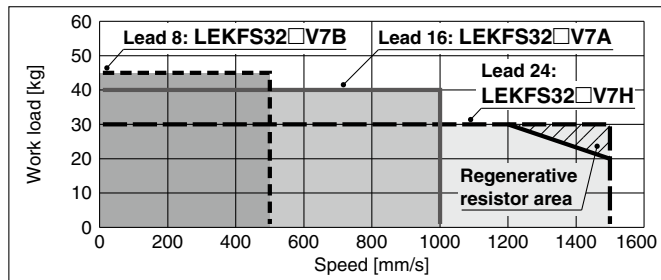


#### Vertical

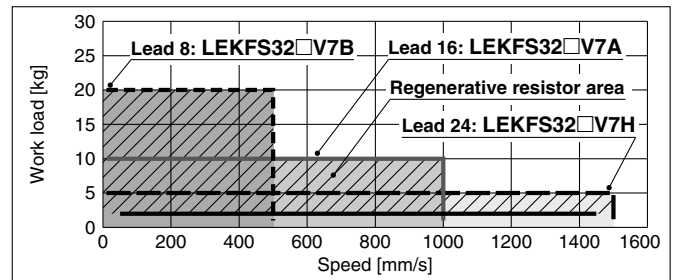


### LEKFS32/Ball Screw Drive

#### Horizontal

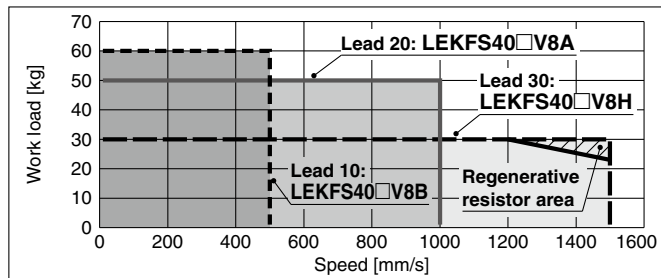


#### Vertical

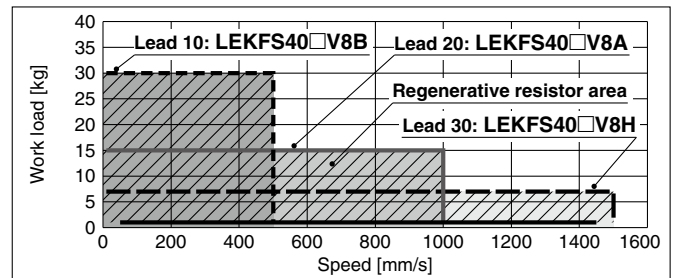


### LEKFS40/Ball Screw Drive

#### Horizontal



#### Vertical



#### Regenerative resistor area

\* When using the actuator in the regenerative resistor area, download the "AC servo drive capacity selection program/SigmaJunmaSize+" from the SMC website. Then, calculate the necessary regenerative resistor capacity to prepare an appropriate external regenerative resistor.

\* The regenerative resistor should be provided by the customer.

#### Applicable Motors/Drivers

Model	Applicable model	
	Motor	Servopack (SMC driver)
<b>LEKFS25</b>	SGMJV-01A3A	SGDV-R90A11 (LECYM2-V5) SGDV-R90A21 (LECYU2-V5)
<b>LEKFS32</b>	SGMJV-02A3A	SGDV-1R6A11 (LECYM2-V7) SGDV-1R6A21 (LECYU2-V7)
<b>LEKFS40</b>	SGMJV-04A3A	SGDV-2R8A11 (LECYM2-V8) SGDV-2R8A21 (LECYU2-V8)

### Allowable Stroke Speed

Model	AC servo motor	Lead		Stroke [mm]					
		Symbol	[mm]	Up to 100	Up to 200	Up to 300	Up to 400	Up to 500	Up to 600
<b>LEKFS25</b>	100 W/40	H	20	1500		1200		—	
		A	12	900		720		—	
		B	6	450		360		—	
		(Motor rotation speed)		(4500 rpm)		(3650 rpm)		—	
<b>LEKFS32</b>	200 W/60	H	24	1500		—		—	
		A	16	1000		—		—	
		B	8	500		—		—	
		(Motor rotation speed)		(3750 rpm)		—		—	
<b>LEKFS40</b>	400 W/60	H	30	—	1500		—		
		A	20	—	1000		—		
		B	10	—	500		—		
		(Motor rotation speed)		—	(3000 rpm)		—		

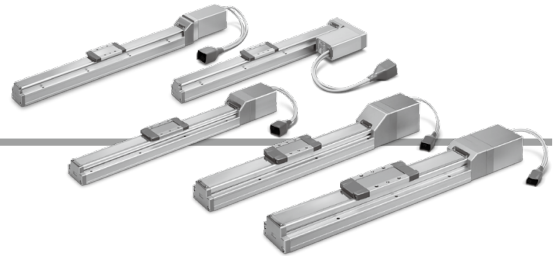
Battery-less Absolute (Step Motor 24 VDC)

# High Rigidity and High Precision Slider Type

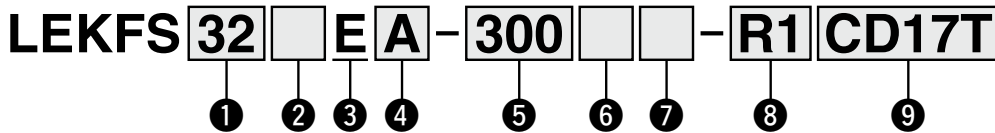
## LEKFS Series LEKFS16, 25, 32, 40



RoHS



### How to Order



#### 1 Size

16
25
32
40

#### 2 Motor mounting position

Nil	In-line
R	Right side parallel
L	Left side parallel

#### 3 Motor type

E	Battery-less absolute (Step motor 24 VDC)
---	---

#### 4 Lead [mm]

Symbol	LEKFS16	LEKFS25	LEKFS32	LEKFS40
H	—	20	24	30
A	10	12	16	20
B	5	6	8	10

#### 5 Stroke\*1

Size	Stroke					
	100	200	300	400	500	600
16	●	●	●	●	●	—
25	●	●	●	●	●	—
32	●	●	●	●	●	—
40	—	●	●	●	●	●

#### 6 Motor option

Nil	Without option
B	With lock

#### 7 Grease application (Seal band part)

Nil	With
N	Without (Roller specification)

#### 8 Actuator cable type/length

Robotic cable [m]			
Nil	None	R8	8*2
R1	1.5	RA	10*2
R3	3	RB	15*2
R5	5	RC	20*2

Refer to pages 71 to 73 for auto switches (to be ordered separately) and page 70 for auto switch mounting.

**9 Controller**

Nil	Without controller
C□1□□	With controller

**C D 1 7 T**

**Interface (Communication protocol/Input/Output)**

Symbol	Type	Number of axes, Special specification	
		Standard	With STO sub-function
5	Parallel input (NPN)	●	
6	Parallel input (PNP)	●	
E	EtherCAT	●	●
9	EtherNet/IP™	●	
P	PROFINET	●	
D	DeviceNet®	●	
L	IO-Link	●	●
M	CC-Link	●	

**Mounting**

7	Screw mounting
8*3	DIN rail

**Number of axes, Special specification**

Symbol	Number of axes	Specification
1	Single axis	Standard
F	Single axis	With STO sub-function

**Communication plug connector, I/O cable\*4**

Symbol	Type	Applicable interface
Nil	Without accessory	—
S	Straight type communication plug connector	DeviceNet®
T	T-branch type communication plug connector	CC-Link Ver. 1.10
1	I/O cable (1.5 m)	Parallel input (NPN) Parallel input (PNP)
3	I/O cable (3 m)	
5	I/O cable (5 m)	

\*1 Please contact SMC for non-standard strokes as they are produced as special orders.

\*2 Produced upon receipt of order

\*3 The DIN rail is not included. It must be ordered separately.

\*4 Select "Nil" for anything other than DeviceNet®, CC-Link, or parallel input.

Select "Nil," "S," or "T" for DeviceNet® or CC-Link.  
Select "Nil," "1," "3," or "5" for parallel input.

**⚠ Caution**

**[CE/UKCA-compliant products]**

EMC compliance was tested by combining the electric actuator LEKFS series and the controller JXC series.

The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.

**[Precautions relating to differences in controller versions]**

When the JXC series is to be used in combination with the battery-less absolute encoder, use a controller that is version V3.4 or S3.4 or higher. For details, refer to page 94.

**[UL-certified products]**

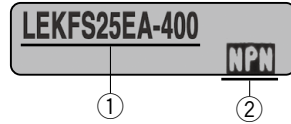
The JXC series controllers used in combination with electric actuators are UL certified.

**The actuator and controller are sold as a package.**

Confirm that the combination of the controller and actuator is correct.

**<Check the following before use.>**

- Check the actuator label for the model number. This number should match that of the controller.
- Parallel input (NPN or PNP)



\* Refer to the Operation Manual for using the products.  
Please download it via our website: <https://www.smcworld.com>

**■ Trademark**

EtherNet/IP® is a registered trademark of ODVA, Inc.

DeviceNet® is a registered trademark of ODVA, Inc.

EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Type	Step data input type	EtherCAT direct input type	EtherCAT direct input type with STO sub-function	EtherNet/IP™ direct input type	PROFINET direct input type	DeviceNet® direct input type	IO-Link direct input type	IO-Link direct input type with STO sub-function	CC-Link direct input type	
Series	JXC51 JXC61	JXCE1	JXCEF	JXC91	JXCP1	JXCD1	JXCL1	JXCLF	JXCM1	
Features	Parallel I/O	EtherCAT direct input	EtherCAT direct input with STO sub-function	EtherNet/IP™ direct input	PROFINET direct input	DeviceNet® direct input	IO-Link direct input	IO-Link direct input with STO sub-function	CC-Link direct input	
Compatible motor	Battery-less absolute (Step motor 24 VDC)									
Max. number of step data	64 points									
Power supply voltage	24 VDC									
Reference page	79							86		

Model Selection  
Battery-less Absolute  
LEKFS  
AC Servo Motor  
LEKFS  
Auto Switch  
JXC51/61  
JXC□  
LECSA  
LECS□-T  
LECYM  
LECYU  
Specific Product Precautions

# LEKFS Series

Battery-less Absolute (Step Motor 24 VDC)

## Specifications

### Battery-less Absolute (Step Motor 24 VDC)

Model			LEKFS16		LEKFS25			LEKFS32			LEKFS40					
Actuator specifications	Stroke [mm]		100 to 500		100 to 500			100 to 500			200 to 600					
	Work load [kg]*1		Horizontal	14	15	12	25	30	20	45	50	25	55	65		
			Vertical	2	4	0.5	7.5	15	4	10	20	2	2	23		
	Speed*1 [mm/s]	In-line	Stroke range	Up to 400	10 to 700	5 to 360	20 to 1100	12 to 750	6 to 400	24 to 1200	16 to 800	8 to 400	30 to 1200	20 to 850	10 to 300	
				401 to 500	10 to 600	5 to 300	—	—	—	—	—	—	—	30 to 1200	20 to 850	10 to 300
				501 to 600	—	—	—	—	—	—	—	—	—	30 to 1200	20 to 850	10 to 300
	Speed*1 [mm/s]	Parallel	Stroke range	Up to 400	10 to 700	5 to 360	20 to 900	12 to 600	6 to 300	24 to 800	16 to 650	8 to 325	30 to 750	20 to 550	10 to 300	
				401 to 500	10 to 600	5 to 300	—	—	—	—	—	—	—	30 to 750	20 to 550	10 to 300
				501 to 600	—	—	—	—	—	—	—	—	—	30 to 750	20 to 550	10 to 300
	Max. acceleration/deceleration [mm/s <sup>2</sup> ]			3000												
	Positioning repeatability [mm]			±0.01 (Lead H: ±0.02)												
	Lost motion [mm]*2			0.05 or less												
	Lead [mm]			10	5	20	12	6	24	16	8	30	20	10		
Impact/Vibration resistance [m/s <sup>2</sup> ]*3			50/20													
Actuation type			Ball screw (LEKFS□), Ball screw + Belt (LEKFS□R/L)													
Guide type			Linear guide													
Operating temperature range [°C]			5 to 40													
Operating humidity range [%RH]			90 or less (No condensation)													
Electric specifications	Motor size			□28		□42			□56.4							
	Motor type			Battery-less absolute (Step motor 24 VDC)												
	Encoder			Battery-less absolute												
	Power supply voltage [V]			24 VDC ±10%												
	Power [W]*4 *6			Max. power 51		Max. power 57			Max. power 123			Max. power 141				
Lock unit specifications	Type*5			Non-magnetizing lock												
	Holding force [N]			29	59	47	78	157	72	118	216	75	113	245		
	Power consumption [W]*6			2.9		5			5			5				
	Rated voltage [V]			24 VDC ±10%												

\*1 Speed changes according to the work load. Check the "Speed-Work Load Graph (Guide)" on pages 22 and 23.

Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m.

\*2 A reference value for correcting errors in reciprocal operation

\*3 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

\*4 Indicates the max. power during operation (including the controller). This value can be used for the selection of the power supply.

\*5 With lock only

\*6 For an actuator with lock, add the power for the lock.

## Weight

Series	LEKFS16				
Stroke [mm]	100	200	300	400	500
Product weight [kg]	1.0	1.2	1.4	1.5	1.7
Additional weight with lock [kg]	0.12				

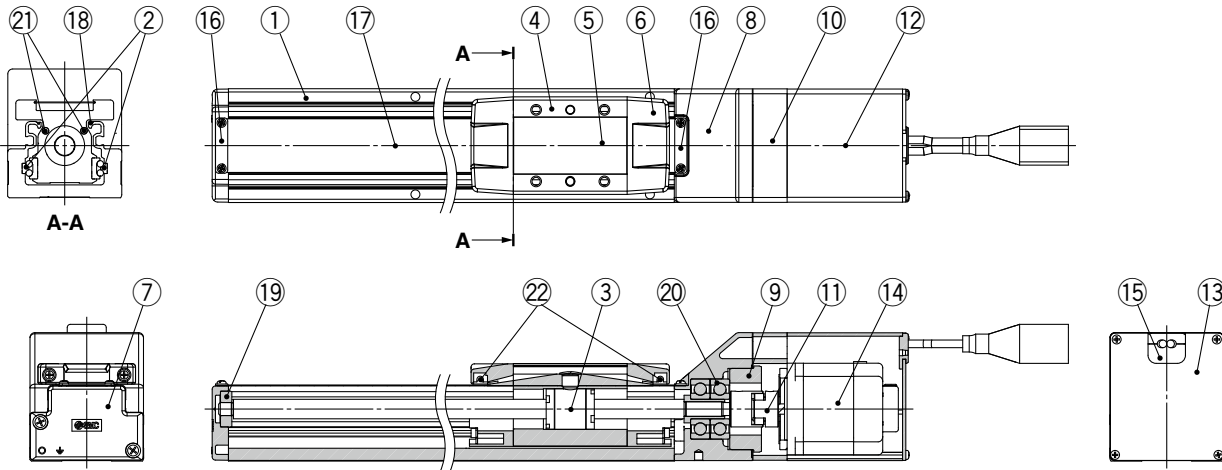
Series	LEKFS25				
Stroke [mm]	100	200	300	400	500
Product weight [kg]	1.8	2.1	2.4	2.6	2.9
Additional weight with lock [kg]	0.26				

Series	LEKFS32				
Stroke [mm]	100	200	300	400	500
Product weight [kg]	3.4	3.8	4.3	4.7	5.1
Additional weight with lock [kg]	0.53				

Series	LEKFS40				
Stroke [mm]	200	300	400	500	600
Product weight [kg]	5.8	6.4	7.0	7.6	8.2
Additional weight with lock [kg]	0.53				



**Construction: In-line Motor**



**Component Parts**

No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	—	
3	<b>Ball screw assembly</b>	—	
4	<b>Table</b>	Aluminum alloy	Anodized
5	<b>Blanking plate</b>	Aluminum alloy	Anodized
6	<b>Seal band holder</b>	Synthetic resin	
7	<b>Housing A</b>	Aluminum die-casted	Coating
8	<b>Housing B</b>	Aluminum die-casted	Coating
9	<b>Bearing stopper</b>	Aluminum alloy	
10	<b>Motor mount</b>	Aluminum alloy	Coating
11	<b>Coupling</b>	—	
12	<b>Motor cover</b>	Aluminum alloy	Anodized
13	<b>End cover</b>	Aluminum alloy	Anodized
14	<b>Motor</b>	—	

No.	Description	Material	Note
15	<b>Rubber bushing</b>	NBR	
16	<b>Band stopper</b>	Stainless steel	
17	<b>Dust seal band</b>	Stainless steel	
18	<b>Seal magnet</b>	—	
19	<b>Bearing</b>	—	Stroke 300 mm or more
20	<b>Bearing</b>	—	
21	<b>Magnet</b>	—	
22	<b>Roller assembly</b>	—	Without grease application

**Replacement Parts/Grease Pack**

Applied portion	Order no.
Ball screw	GR-S-010 (10 g) GR-S-020 (20 g)
Rail guide	
Dust seal band (When "Without" is selected for the grease application, grease is applied only on the back side.)	

Model Selection

Battery-less Absolute

**LEKFS**

AC Servo Motor

**LEKFS**

Auto Switch

JXC51/61

JXC

LECSA  
LECS-T

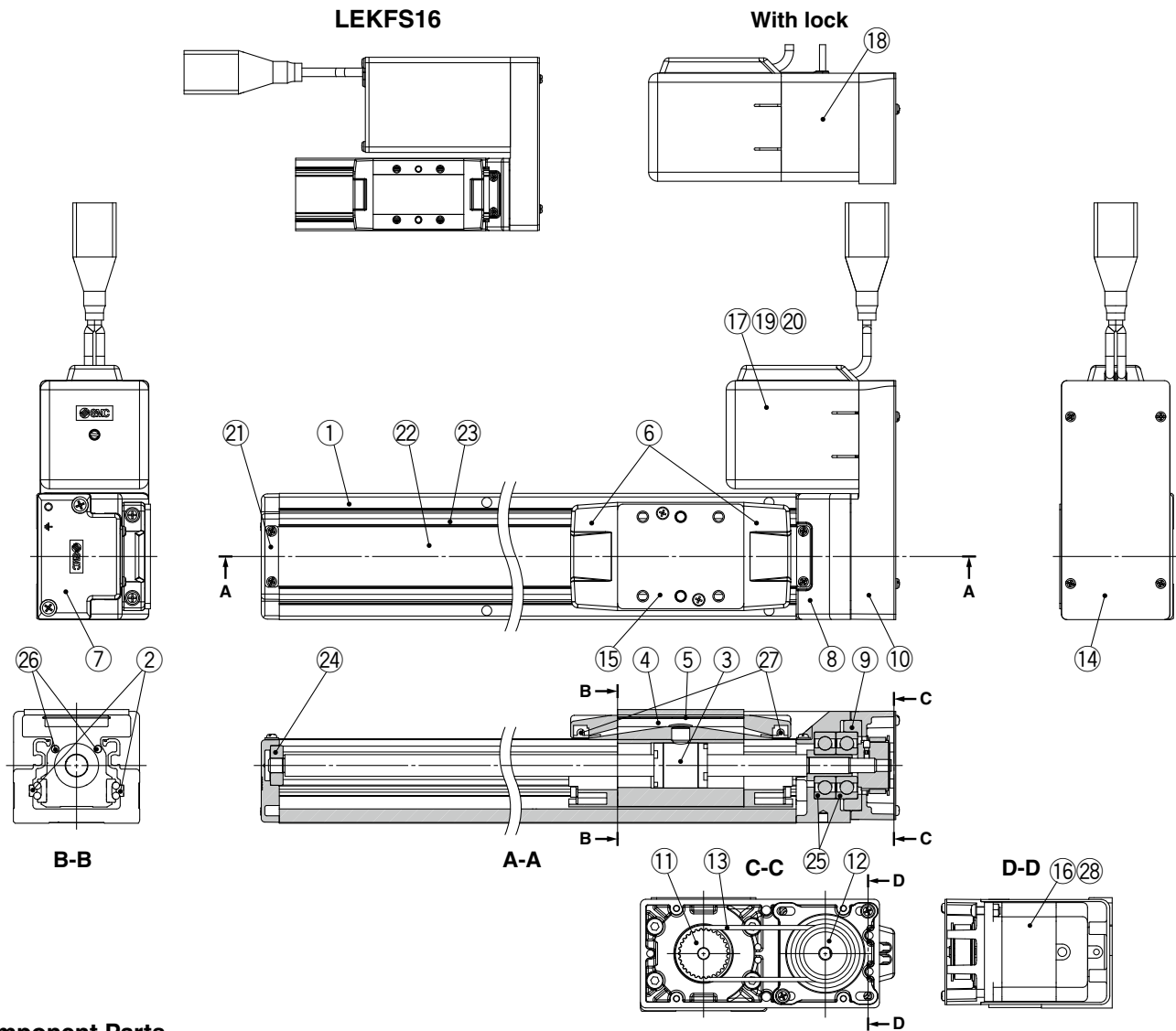
LECYM  
LECYU

Specific Product  
Precautions

# LEKFS Series

Battery-less Absolute (Step Motor 24 VDC)

## Construction: Right/Left Side Parallel Motor



### Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Rail guide	—	
3	Ball screw assembly	—	
4	Table	Aluminum alloy	Anodized
5	Blanking plate	Aluminum alloy	Anodized
6	Seal band holder	Synthetic resin	
7	Housing A	Aluminum die-casted	Coating
8	Housing B	Aluminum die-casted	Coating
9	Bearing stopper	Aluminum alloy	
10	Return plate	Aluminum alloy	Coating/Anodized
11	Pulley	Aluminum alloy	
12	Pulley	Aluminum alloy	
14	Cover plate	Aluminum alloy	Anodized
15	Table spacer	LEKFS32	Aluminum alloy Anodized (LEFS32 only)
16	Motor	—	
17	Motor cover	LEKFS16	Aluminum alloy Anodized
		LEKFS25/32/40	Synthetic resin
18	Motor cover with lock	LEKFS25/32/40	Aluminum alloy Anodized
19	End cover	LEKFS16	Aluminum alloy Anodized
20	Rubber bushing	LEKFS16	NBR
21	Band stopper	Stainless steel	

No.	Description	Material	Note
22	Dust seal band	Stainless steel	
23	Seal magnet	—	
24	Bearing	—	Stroke 300 mm or more
25	Bearing	—	
26	Magnet	—	
27	Roller assembly	—	Without grease application
28	Heat dissipation sheet	LEKFS16	—

### Replacement Parts/Belt

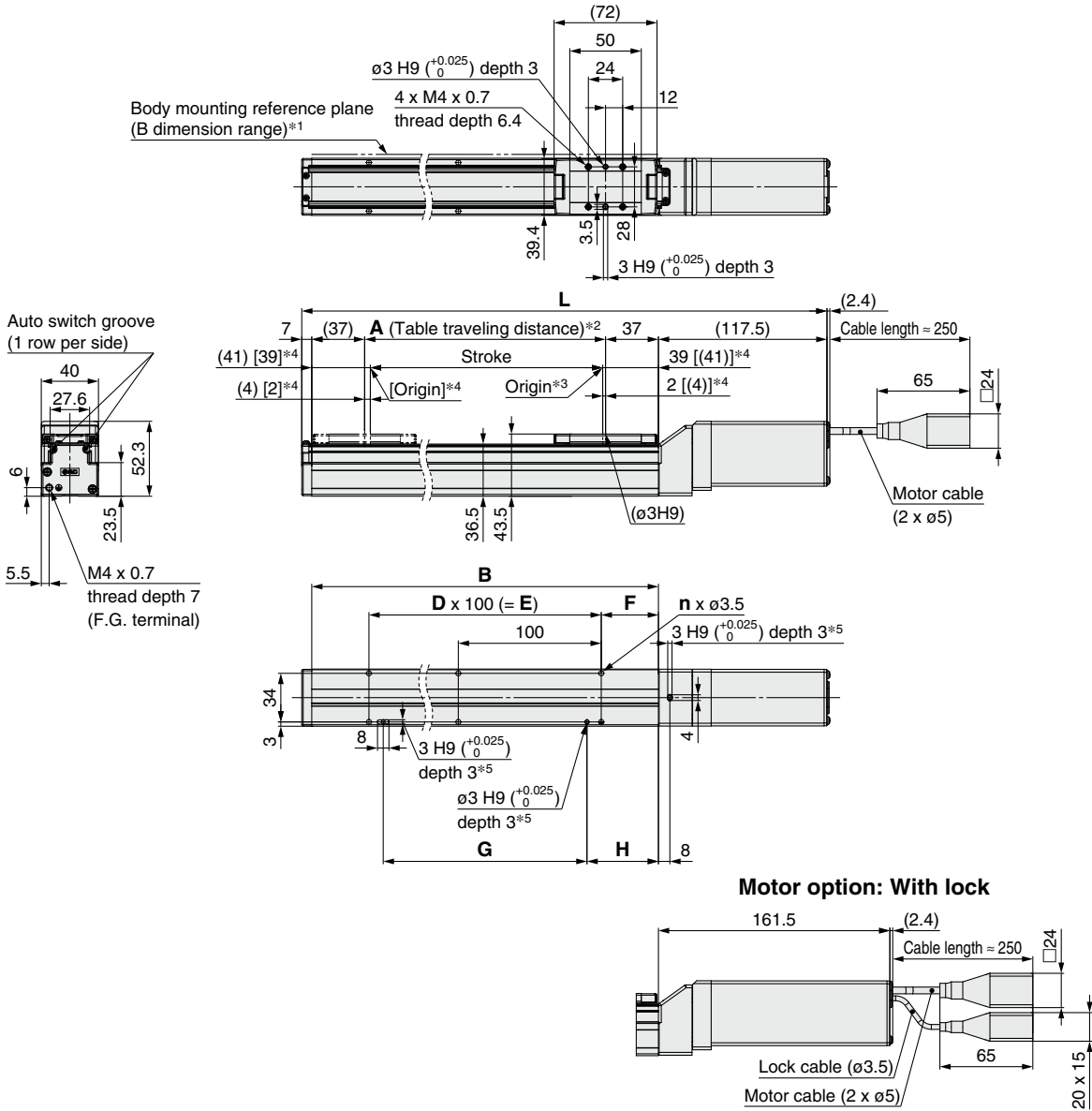
No.	Size	Order no.
13	16	LE-D-6-5
	25	LE-D-6-2
	32	LE-D-6-3
	40	LE-D-6-4

### Replacement Parts/Grease Pack

Applied portion	Order no.
Ball screw	GR-S-010 (10 g) GR-S-020 (20 g)
Rail guide	
Dust seal band	
(When "Without" is selected for the grease application, grease is applied only on the back side.)	

**Dimensions: In-line Motor**

**LEKFS16E**



\*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)

In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.

\*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.

\*3 Position after returning to origin

\*4 [ ] for when the direction of return to origin has changed

\*5 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.

**Dimensions**

Model	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
LEKFS16E□-100□	304.5	348.5	106	180	4	—	—	40	80	50
LEKFS16E□-200□	404.5	448.5	206	280	6	2	200		180	
LEKFS16E□-300□	504.5	548.5	306	380	8	3	300		280	
LEKFS16E□-400□	604.5	648.5	406	480	10	4	400		380	
LEKFS16E□-500□	704.5	748.5	506	580	12	5	500		480	

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

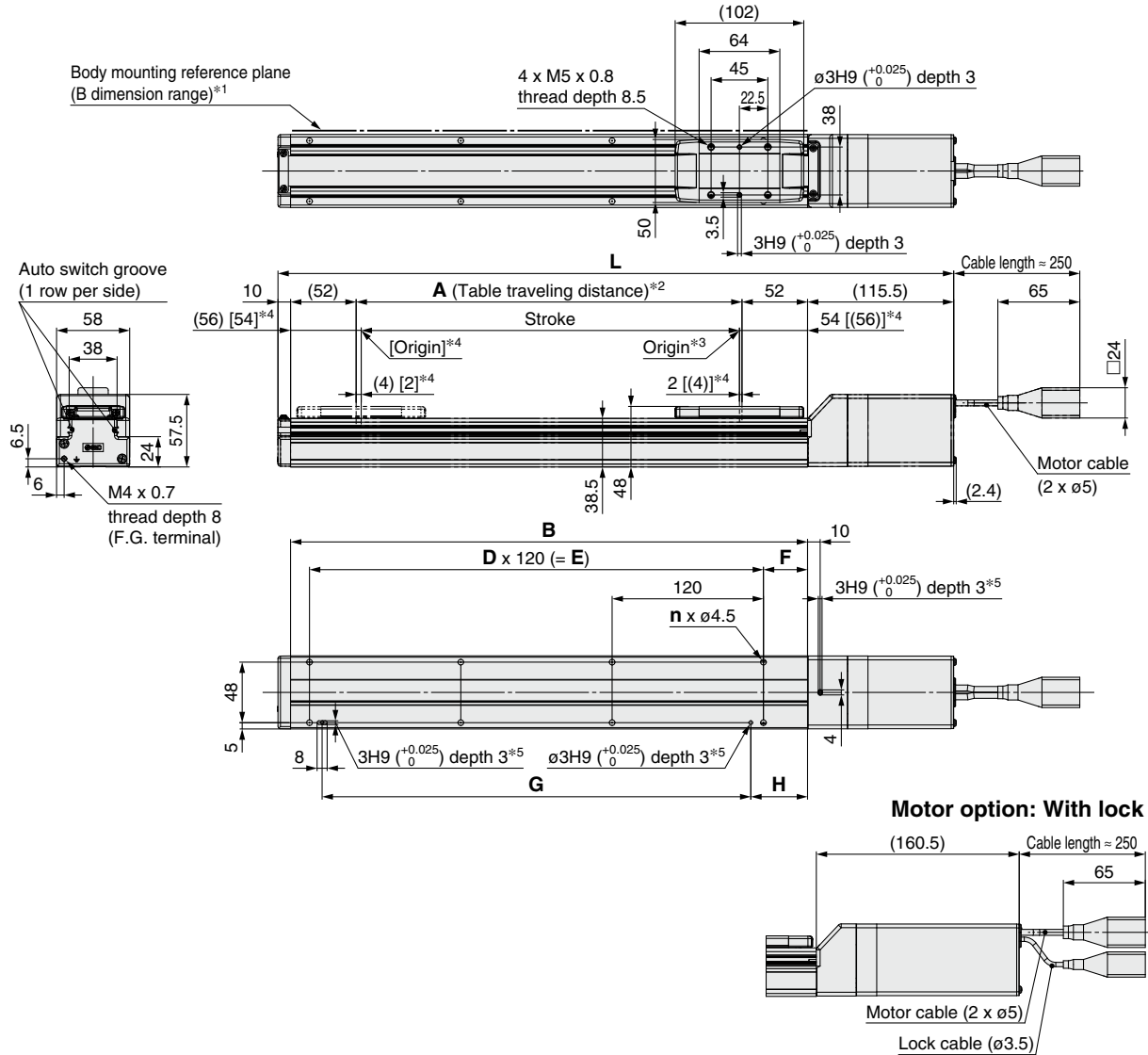
Specific Product Precautions

# LEKFS Series

Battery-less Absolute (Step Motor 24 VDC)

## Dimensions: In-line Motor

### LEKFS25E



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Position after returning to origin
- \*4 [ ] for when the direction of return to origin has changed
- \*5 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.

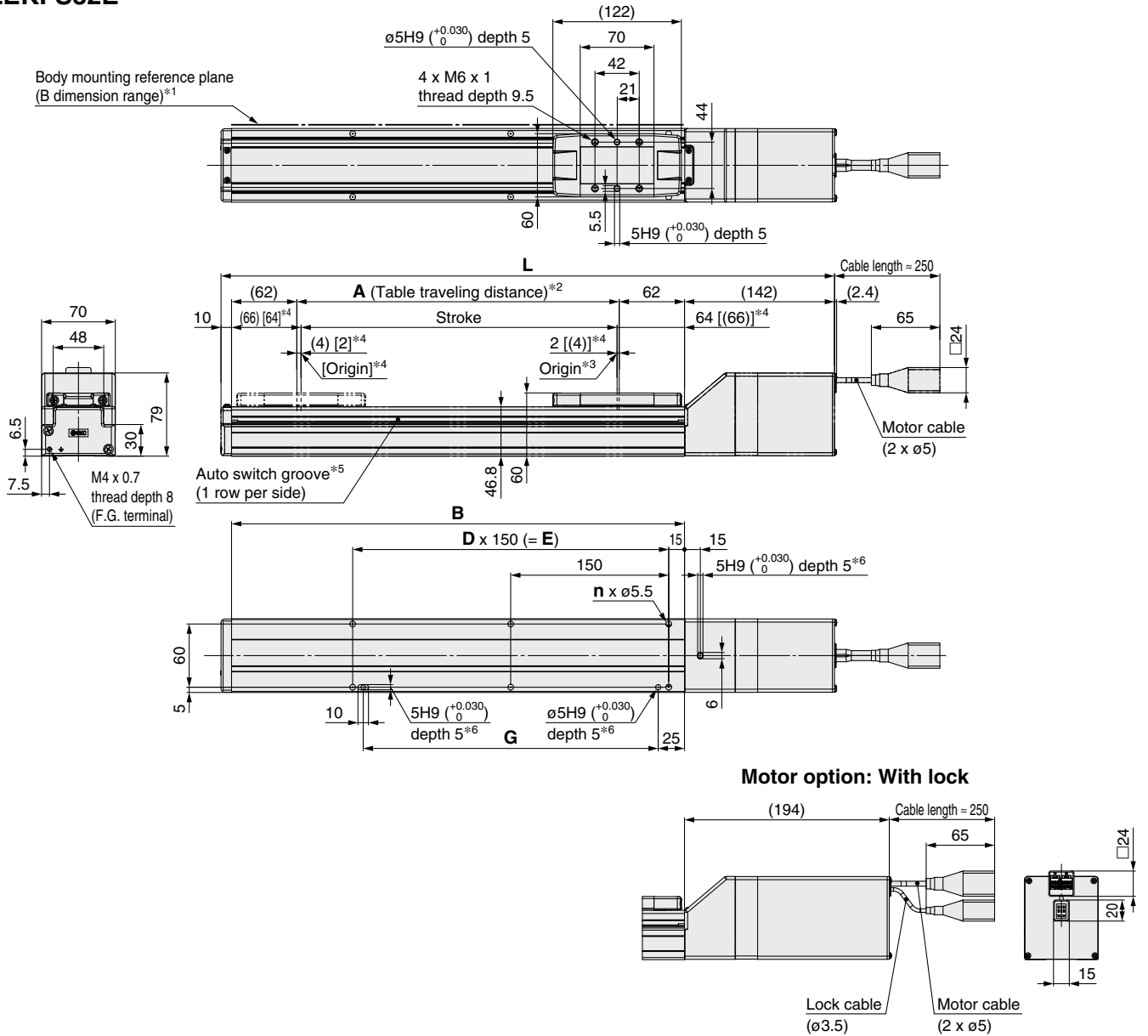
### Dimensions

[mm]

Model	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
LEKFS25E□-100□	335.5	380.5	106	210	4	—	—	35	100	45
LEKFS25E□-200□	435.5	480.5	206	310	6	2	240		220	
LEKFS25E□-300□	535.5	580.5	306	410	8	3	360		340	
LEKFS25E□-400□	635.5	680.5	406	510	8	3	360		340	
LEKFS25E□-500□	735.5	780.5	506	610	10	4	480		460	

**Dimensions: In-line Motor**

**LEKFS32E**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Position after returning to origin
- \*4 [ ] for when the direction of return to origin has changed
- \*5 A switch spacer (BM Y3-016) is required to secure auto switches. Please order it separately.
- \*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.

**Dimensions**

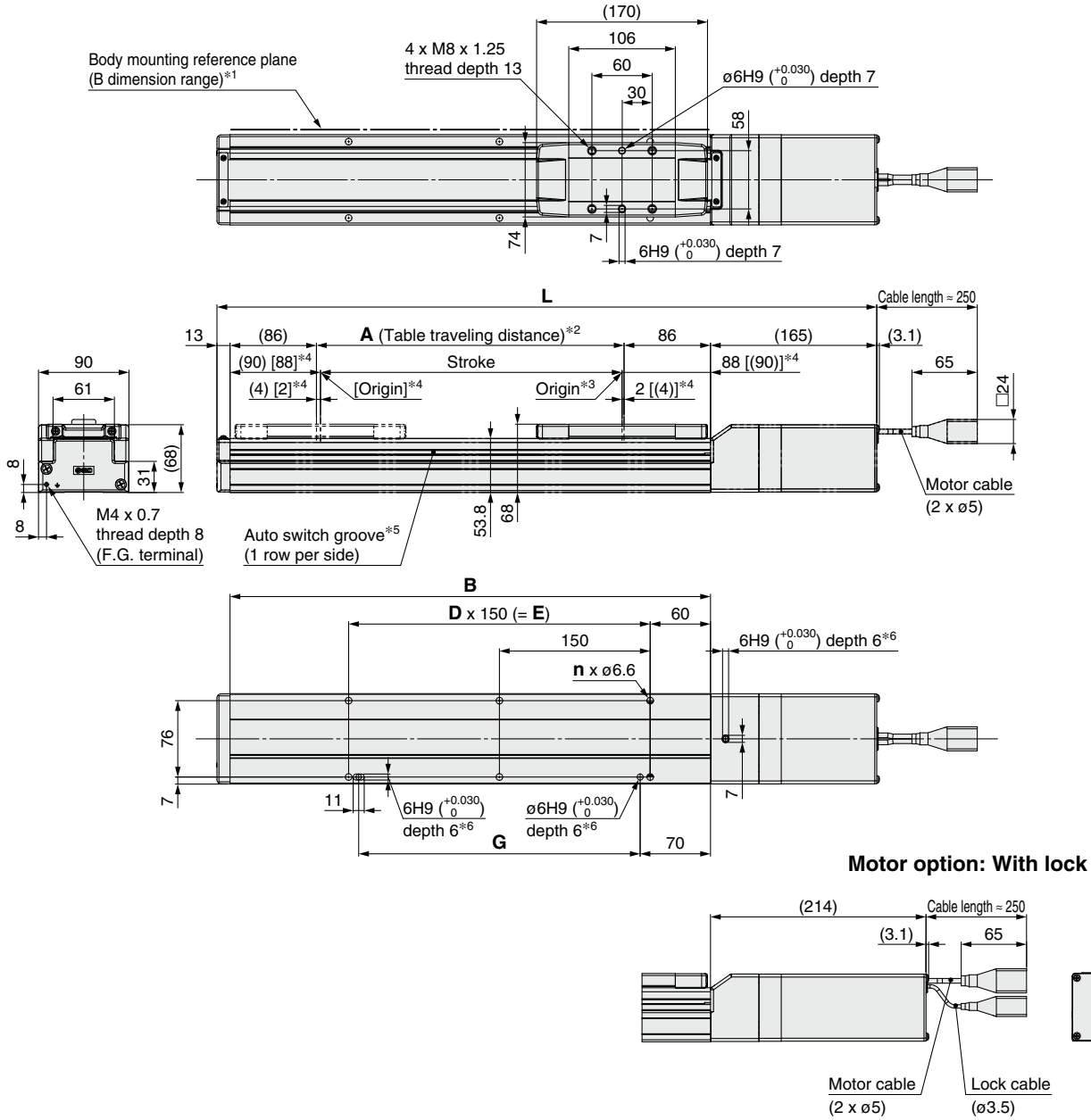
Model	L		A	B	n	D	E	G
	Without lock	With lock						
LEKFS32E□-100□	382	434	106	230	4	—	—	130
LEKFS32E□-200□	482	534	206	330	6	2	300	280
LEKFS32E□-300□	582	634	306	430	6	2	300	280
LEKFS32E□-400□	682	734	406	530	8	3	450	430
LEKFS32E□-500□	782	834	506	630	10	4	600	580

# LEKFS Series

Battery-less Absolute (Step Motor 24 VDC)

## Dimensions: In-line Motor

### LEKFS40E



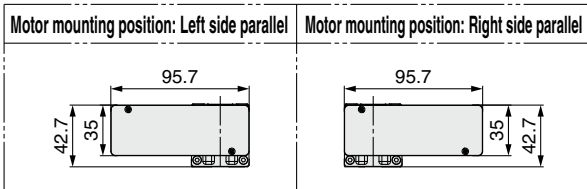
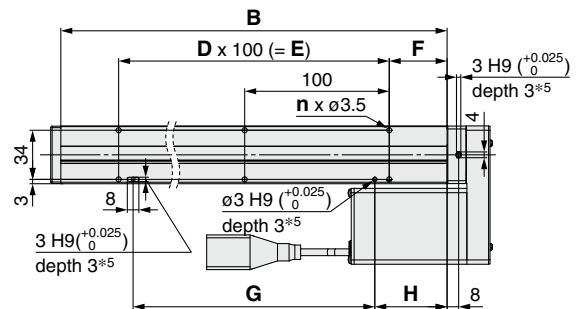
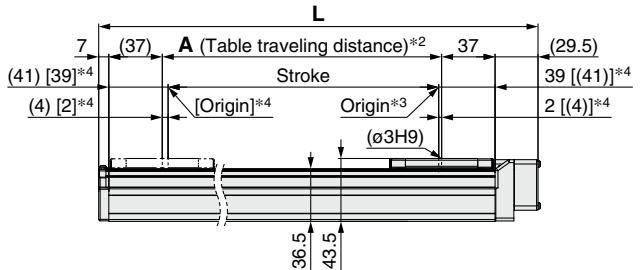
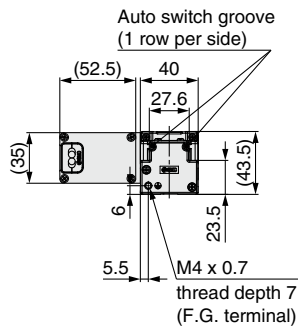
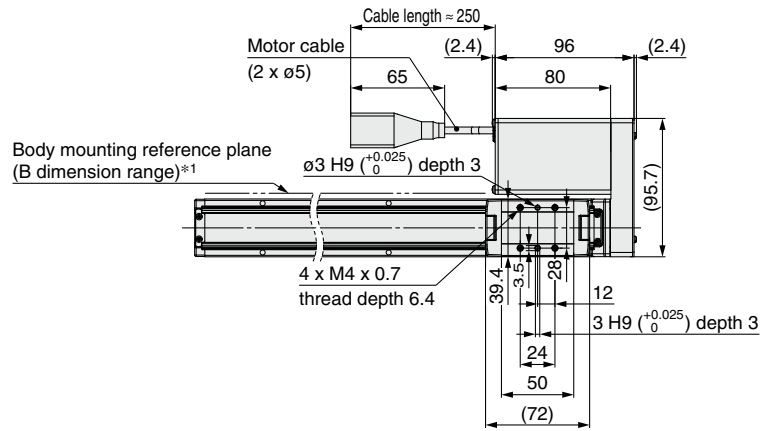
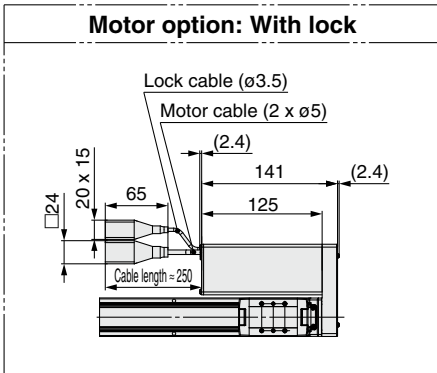
- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Position after returning to origin
- \*4 [ ] for when the direction of return to origin has changed
- \*5 A switch spacer (BM-Y3-016) is required to secure auto switches. Please order it separately.
- \*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.

### Dimensions

Model	L		A	B	n	D	E	G
	Without lock	With lock						
LEKFS40E□-200□	556	605	206	378	6	2	300	280
LEKFS40E□-300□	656	705	306	478	6	2	300	280
LEKFS40E□-400□	756	805	406	578	8	3	450	430
LEKFS40E□-500□	856	905	506	678	10	4	600	580
LEKFS40E□-600□	956	1005	606	778	10	4	600	580

**Dimensions: Right/Left Side Parallel Motor**

**LEKFS16RE**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm) In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Position after returning to origin
- \*4 [ ] for when the direction of return to origin has changed
- \*5 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.

**Dimensions**

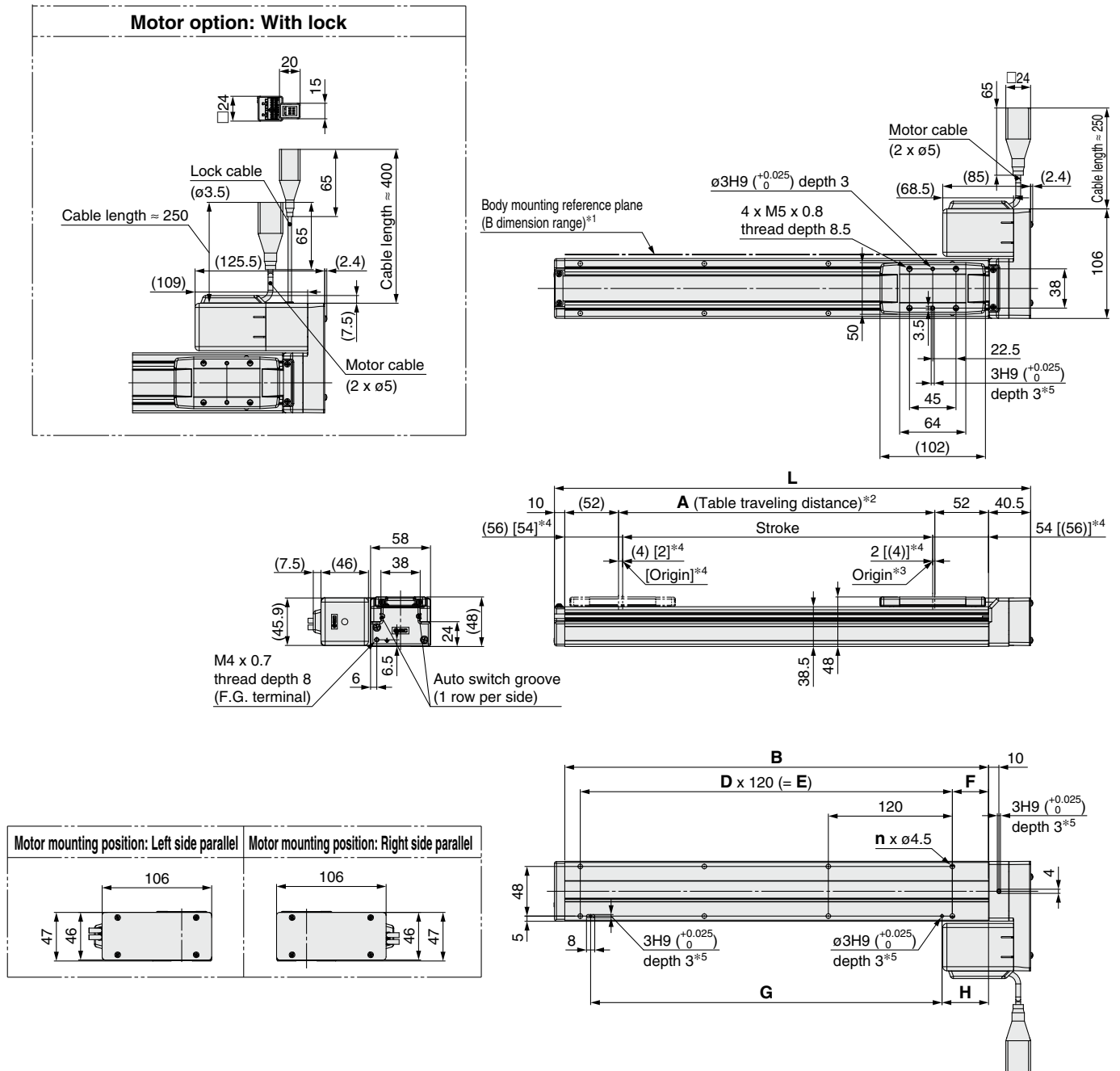
Model	L	A	B	n	D	E	F	G	H
LEKFS16□E□-100□	216.5	106	180	4	—	—	40	80	50
LEKFS16□E□-200□	316.5	206	280	6	2	200		180	
LEKFS16□E□-300□	416.5	306	380	8	3	300		280	
LEKFS16□E□-400□	516.5	406	480	10	4	400		380	
LEKFS16□E□-500□	616.5	506	580	12	5	500		480	

# LEKFS Series

Battery-less Absolute (Step Motor 24 VDC)

## Dimensions: Right/Left Side Parallel Motor

### LEKFS25RE



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Position after returning to origin
- \*4 [ ] for when the direction of return to origin has changed
- \*5 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \* This illustration shows the motor mounting position for the right side parallel type.

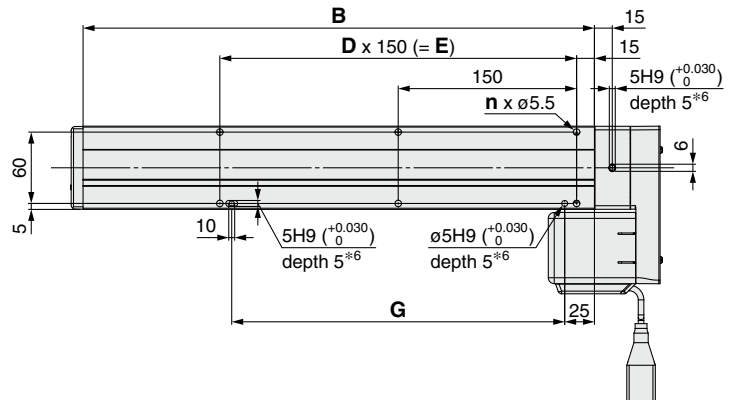
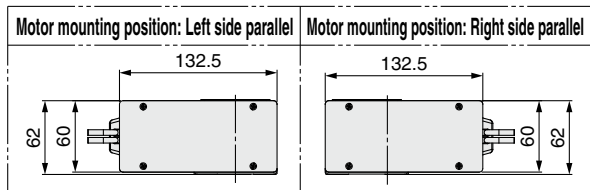
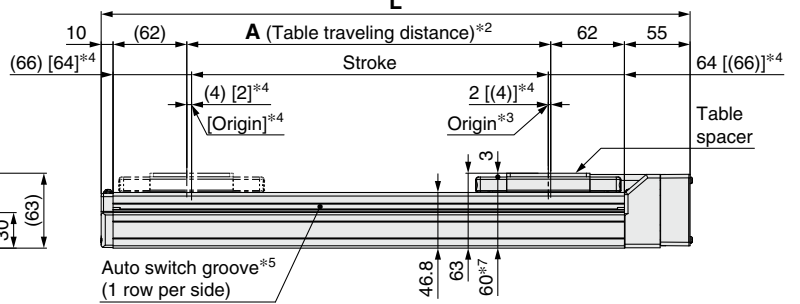
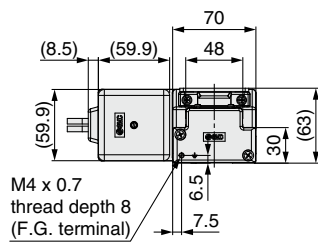
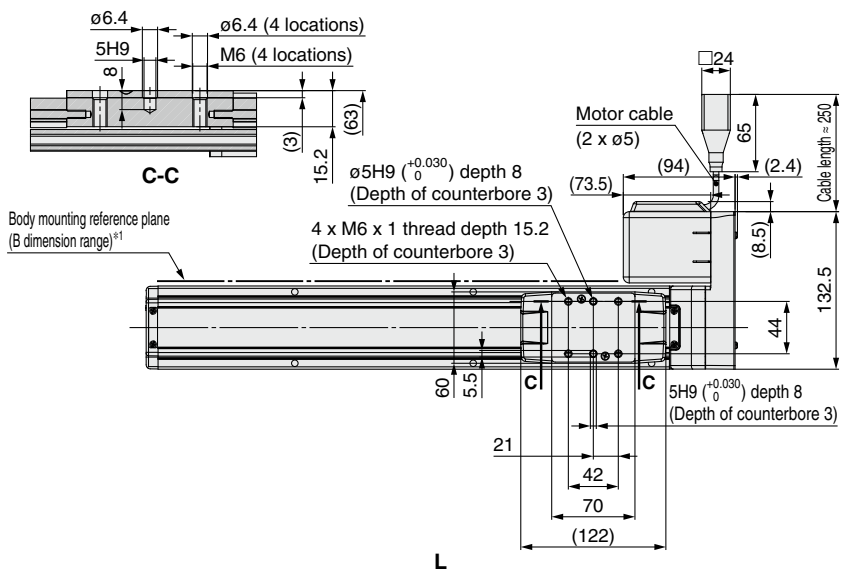
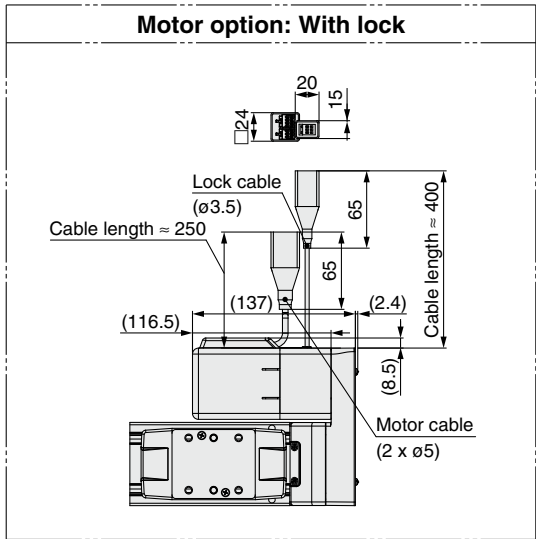
### Dimensions

Model	L	A	B	n	D	E	F	G	H
LEKFS25□E□-100□	260.5	106	210	4	—	—		100	
LEKFS25□E□-200□	360.5	206	310	6	2	240		220	
LEKFS25□E□-300□	460.5	306	410	8	3	360	35	340	45
LEKFS25□E□-400□	560.5	406	510	8	3	360		340	
LEKFS25□E□-500□	660.5	506	610	10	4	480		460	



Dimensions: Right/Left Side Parallel Motor

LEKFS32RE



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm) In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Position after returning to origin
- \*4 [ ] for when the direction of return to origin has changed
- \*5 A switch spacer (BM3-016) is required to secure auto switches. Please order it separately.
- \*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \*7 When the table spacer is removed
- \* This illustration shows the motor mounting position for the right side parallel type.

Dimensions

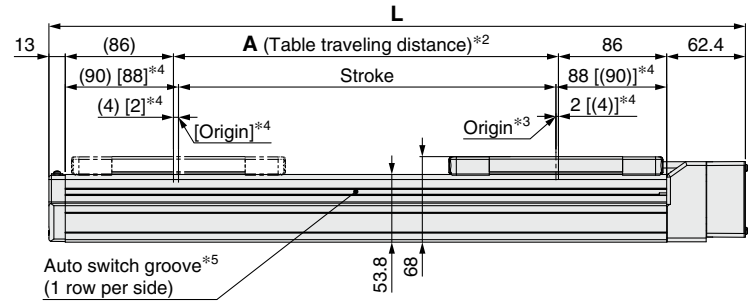
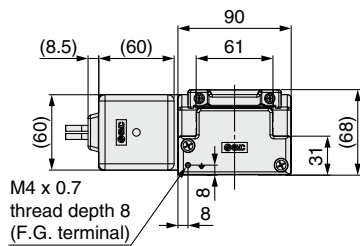
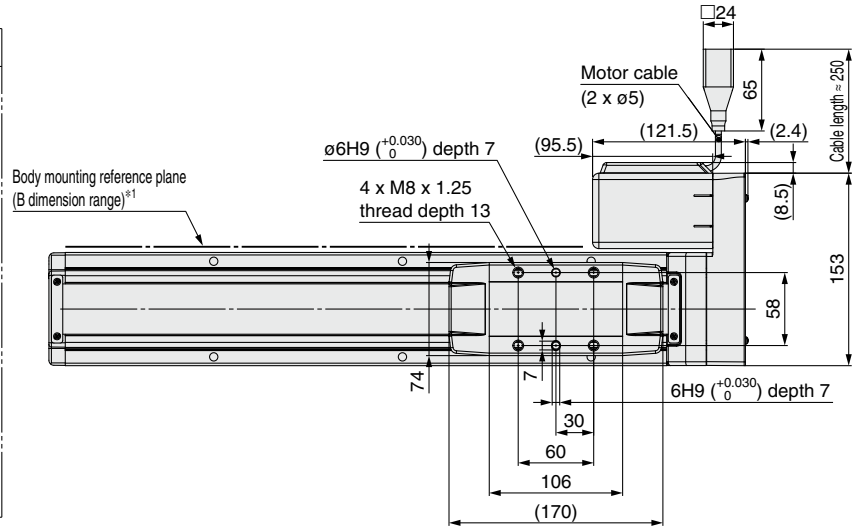
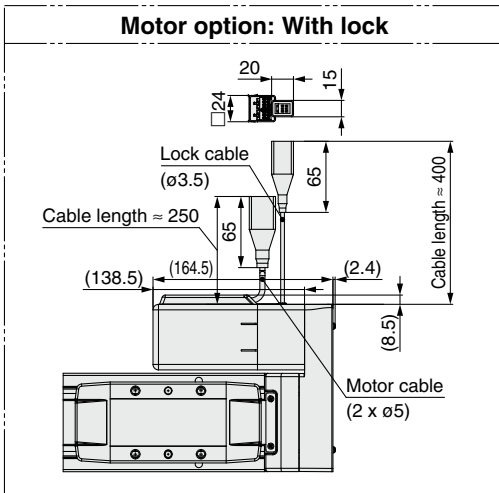
Model	L	A	B	n	D	E	G
LEKFS32□E□-100□	295	106	230	4	—	—	130
LEKFS32□E□-200□	395	206	330	6	2	300	280
LEKFS32□E□-300□	495	306	430	6	2	300	280
LEKFS32□E□-400□	595	406	530	8	3	450	430
LEKFS32□E□-500□	695	506	630	10	4	600	580

# LEKFS Series

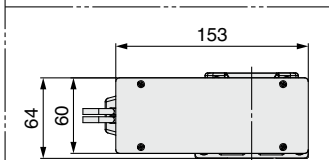
Battery-less Absolute (Step Motor 24 VDC)

## Dimensions: Right/Left Side Parallel Motor

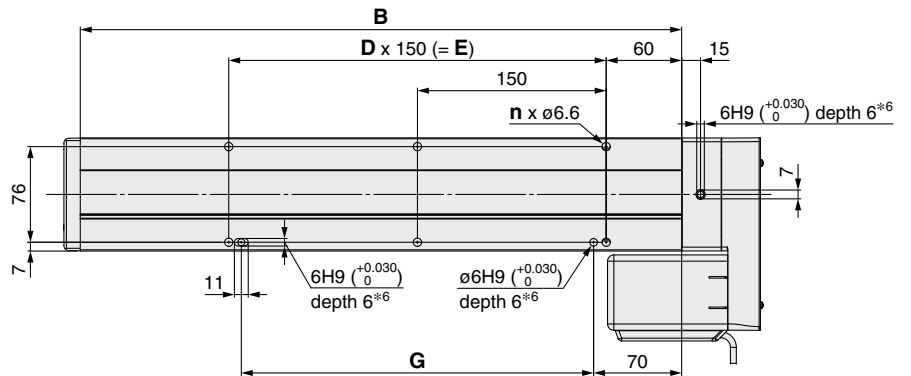
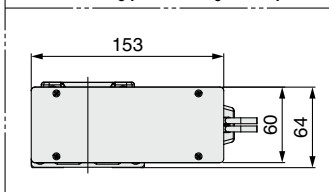
### LEKFS40RE



#### Motor mounting position: Left side parallel



#### Motor mounting position: Right side parallel

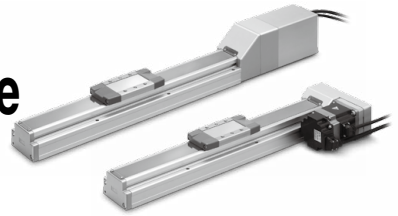


- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Position after returning to origin
- \*4 [ ] for when the direction of return to origin has changed
- \*5 A switch spacer (BM3-016) is required to secure auto switches. Please order it separately.
- \*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \* This illustration shows the motor mounting position for the right side parallel type.

### Dimensions

Model	L	A	B	n	D	E	G
LEKFS40□E□-200□	453.4	206	378	6	2	300	280
LEKFS40□E□-300□	553.4	306	478	6	2	300	280
LEKFS40□E□-400□	653.4	406	578	8	3	450	430
LEKFS40□E□-500□	753.4	506	678	10	4	600	580
LEKFS40□E□-600□	853.4	606	778	10	4	600	580

# High Rigidity and High Precision Slider Type Ball Screw Drive LEKFS Series LEKFS25, 32, 40

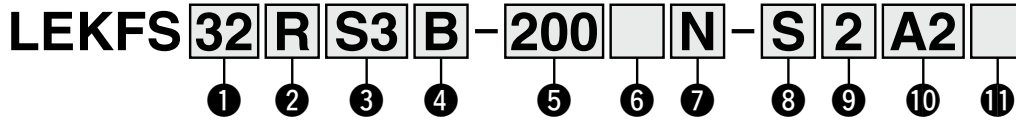


For details, refer to page 128.



LECY Series ▶ p. 60

## How to Order



### ① Size

25
32
40

### ② Motor mounting position

Nil	In-line
R	Right side parallel
L	Left side parallel

### ④ Lead [mm]

Symbol	LEKFS25	LEKFS32	LEKFS40
H	20	24	30
A	12	16	20
B	6	8	10

### ⑤ Stroke [mm]

100	100
to	to
600	600

### ⑥ Motor option

Nil	Without option
B	With lock

\* For details, refer to the applicable stroke table below.

### ③ Motor type

Symbol	Type	Output [W]	① Size	⑩ Driver type	Compatible drivers
S2*1	AC servo motor (Incremental encoder)	100	25	A1/A2	LECSA□-S1
S3		200	32	A1/A2	LECSA□-S3
S4		400	40	A2	LECSA2-S4
T6*2	AC servo motor (Absolute encoder)	100	25	B2	LECSB2-T5
T7				C2	LECSC2-T5
				S2	LECSS2-T5
T8		B2	LECSB2-T7		
		C2	LECSC2-T7		
		S2	LECSS2-T7		
T8	B2	LECSB2-T8			
	C2	LECSC2-T8			
	S2	LECSS2-T8			

\*1 For motor type S2, the compatible driver part number suffix is S1.  
\*2 For motor type T6, the compatible driver part number is LECS□2-T5.

### ⑦ Grease application (Seal band part)

Nil	With
N	Without (Roller specification)

### ⑧ Cable type\*1 \*2

Nil	Without cable
S	Standard cable
R	Robotic cable (Flexible cable)

\*1 A motor cable and encoder cable are included with the product. (A lock cable is also included if motor option "B: With lock" is selected.)

\*2 Standard cable entry direction is "(B) Counter axis side." For the right/left side parallel motor types of the ball screw drive, the cable entry direction is "(A) Axis side." (For details, refer to page 111.)

### ⑨ Cable length\*1 [m]

Nil	Without cable
2	2
5	5
A	10

\*1 The length of the encoder, motor and lock cables are the same.

### ⑩ Driver type

	Compatible drivers	Power supply voltage [V]	Size		
			25	32	40
Nil	Without driver	—	●	●	●
A1	LECSA1-S□	100 to 120	●	●	—
A2	LECSA2-S□	200 to 230	●	●	●
B2	LECSB2-S□	200 to 230	●	●	●
C2	LECSB2-T□	200 to 240	●	●	●
	LECSB2-T□	200 to 240	●	●	●
S2	LECSA2-S□	200 to 230	●	●	●
	LECSA2-T□	200 to 240	●	●	●

\* When a driver type is selected, a cable is included. Select the cable type and cable length. Example) S2S2: Standard cable (2 m) + Driver (LECSS2) S2: Standard cable (2 m) Nil: Without cable and driver

### ⑪ I/O cable length [m]\*1

Nil	Without cable
H	Without cable (Connector only)
1	1.5

\*1 When "Nil: Without driver" is selected for the driver type, only "Nil: Without cable" can be selected. Refer to page 112 if an I/O cable is required. (Options are shown on page 112.)

### Support Guide/LEFG Series

The support guide was designed to support workpieces with significant overhang. (Web Catalog)



### Applicable Stroke Table

Stroke [mm]	100	200	300	400	500	600
LEKFS25	●	●	●	●	●	—
LEKFS32	●	●	●	●	●	—
LEKFS40	—	●	●	●	●	●

\* Please contact SMC for non-standard strokes as they are produced as special orders.

### Compatible Drivers

For auto switches, refer to pages 70 to 73.

Driver type	Pulse input type/ Positioning type	Pulse input type	CC-Link direct input type	SSCNET III/H type
Series	LECSA	LECSB-T	LECSA2	LECSS-T
Number of point tables	Up to 7	Up to 255	Up to 255 (2 stations occupied)	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET III/H
Control encoder	Incremental 17-bit encoder	Absolute 22-bit encoder	Absolute 18-bit encoder	Absolute 22-bit encoder
Communication function	USB communication	USB communication, RS422 communication	—	USB communication
Power supply voltage [V]	100 to 120 VAC (50/60 Hz), 200 to 230 VAC (50/60 Hz)	200 to 240 VAC (50/60 Hz)	200 to 230 VAC (50/60 Hz)	200 to 240 VAC (50/60 Hz)
Reference page				

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC□

LECSA LECS□-T

LECYM LECYU

Specific Product Precautions

## Specifications

### AC Servo Motor

Model			LEKFS25			LEKFS32			LEKFS40			
Actuator specifications	Stroke [mm]		100 to 500			100 to 500			200 to 600			
	Work load [kg]*1	Horizontal	10	20	20	30	40	45	30	50	60	
		Vertical	4	8	15	5	10	20	7	15	30	
	Speed*2 [mm/s]	Stroke range	Up to 400	1500	900	450	1500	1000	500	1500	1000	500
			401 to 500	1200	720	360	1500	1000	500	1500	1000	500
			501 to 600	—	—	—	—	—	—	1500	1000	500
	Max. acceleration/deceleration [mm/s <sup>2</sup> ]		20000 (Refer to pages 29 to 31 for limit according to work load and duty ratio.)									
	Positioning repeatability [mm]		±0.01									
	Lost motion [mm]*3		0.05 or less									
	Lead [mm]		20	12	6	24	16	8	30	20	10	
	Impact/Vibration resistance [m/s <sup>2</sup> ]*4		50/20									
	Actuation type		Ball screw (LEKFS□), Ball screw + Belt (LEKFS□R/L)									
	Guide type		Linear guide									
Operating temperature range [°C]		5 to 40										
Operating humidity range [%RH]		90 or less (No condensation)										
Electric specifications	Motor output/Size		100 W/□40			200 W/□60			400 W/□60			
	Motor type		AC servo motor (100/200 VAC)									
	Encoder*7		Motor type S2, S3, S4: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type T6, T7, T8: Absolute 22-bit encoder (Resolution: 4194304 p/rev) (For LECSB2-T□, LECS2-T□) Motor type T6, T7, T8: Absolute 18-bit encoder (Resolution: 262144 p/rev) (For LECS2-T□)									
	Power [W]*5		Max. power 445			Max. power 725			Max. power 1275			
Lock unit specifications	Type*6		Non-magnetizing lock									
	Holding force [N]		78	131	255	131	197	385	220	330	660	
	Power consumption at 20°C [W]		6.3			7.9			7.9			
	Rated voltage [V]		24 VDC (0/-10%)									

\*1 For details, refer to the “Speed–Work Load Graph (Guide)” on page 28.

\*2 The allowable speed changes according to the stroke.

\*3 A reference value for correcting errors in reciprocal operation

\*4 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

\*5 Indicates the max. power during operation (including the driver). When selecting the power supply capacity, refer to the power supply capacity in the operation manual of each driver.

\*6 Only when motor option “With lock” is selected

\*7 For motor types T6, T7, and T8, the resolution will change depending on the driver type.

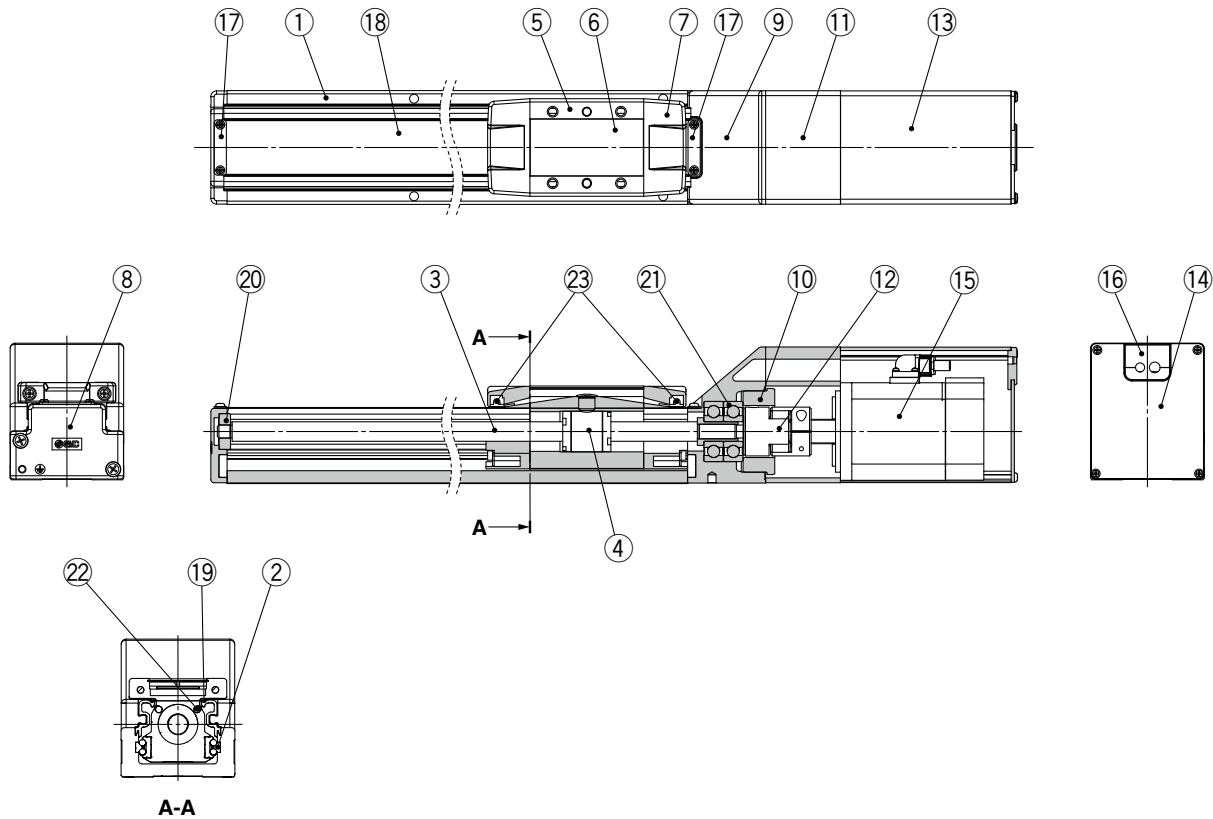
## Weight

Series		LEKFS25□□				
Stroke [mm]		100	200	300	400	500
Motor type	S2	2.1	2.4	2.7	2.9	3.2
	T6	2.2	2.5	2.8	3	3.3
Additional weight with lock [kg]		S2: 0.2/T6: 0.3				

Series		LEKFS32□□				
Stroke [mm]		100	200	300	400	500
Motor type	S3	3.6	4.0	4.5	4.9	5.3
	T7	3.5	3.9	4.4	4.8	5.2
Additional weight with lock [kg]		S3: 0.4/T7: 0.5				

Series		LEKFS40□□				
Stroke [mm]		200	300	400	500	600
Motor type	S4	6.2	6.8	7.4	8.0	8.6
	T8	6.3	6.9	7.5	8.1	8.7
Additional weight with lock [kg]		0.5				

**Construction: In-line Motor**



**Component Parts**

No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	—	
3	<b>Ball screw shaft</b>	—	
4	<b>Ball screw nut</b>	—	
5	<b>Table</b>	Aluminum alloy	Anodized
6	<b>Blanking plate</b>	Aluminum alloy	Anodized
7	<b>Seal band holder</b>	Synthetic resin	
8	<b>Housing A</b>	Aluminum die-casted	Coating
9	<b>Housing B</b>	Aluminum die-casted	Coating
10	<b>Bearing stopper</b>	Aluminum alloy	
11	<b>Motor mount</b>	Aluminum alloy	Coating
12	<b>Coupling</b>	—	
13	<b>Motor cover</b>	Aluminum alloy	Anodized
14	<b>End cover</b>	Aluminum alloy	Anodized
15	<b>Motor</b>	—	

No.	Description	Material	Note
16	<b>Rubber bushing</b>	NBR	
17	<b>Band stopper</b>	Stainless steel	
18	<b>Dust seal band</b>	Stainless steel	
19	<b>Seal magnet</b>	—	
20	<b>Bearing</b>	—	Stroke 300 mm or more
21	<b>Bearing</b>	—	
22	<b>Magnet</b>	—	
23	<b>Roller assembly</b>	—	Without grease application

**Replacement Parts/Grease Pack**

Applied portion	Order no.
Ball screw	GR-S-010 (10 g) GR-S-020 (20 g)
Rail guide	
Dust seal band (When "Without" is selected for the grease application, grease is applied only on the back side.)	

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC

LECSA  
LECS-T

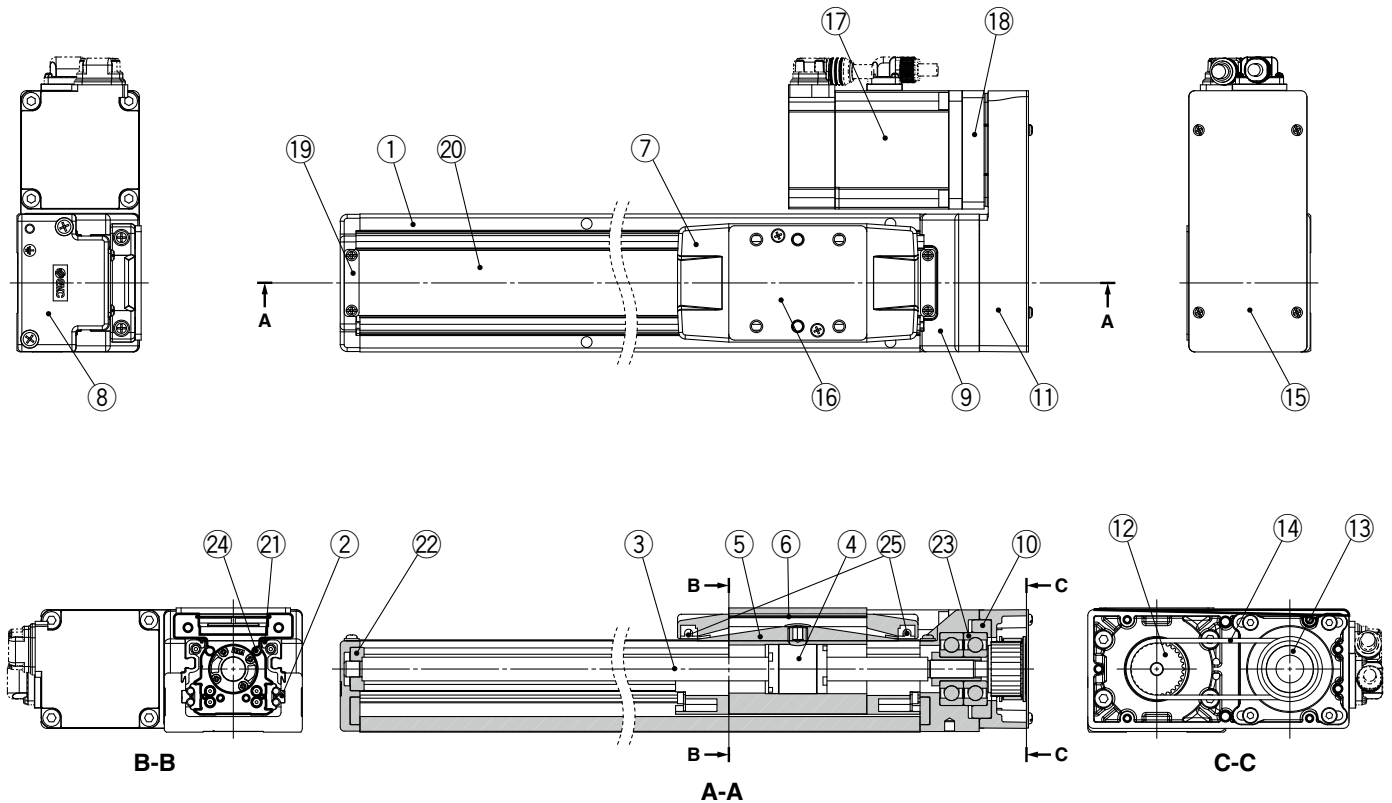
LECYM  
LECYU

Specific Product Precautions

# LEKFS Series

AC Servo Motor

## Construction: Right/Left Side Parallel Motor



### Component Parts

No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	—	
3	<b>Ball screw shaft</b>	—	
4	<b>Ball screw nut</b>	—	
5	<b>Table</b>	Aluminum alloy	Anodized
6	<b>Blanking plate</b>	Aluminum alloy	Anodized
7	<b>Seal band holder</b>	Synthetic resin	
8	<b>Housing A</b>	Aluminum die-casted	Coating
9	<b>Housing B</b>	Aluminum die-casted	Coating
10	<b>Bearing stopper</b>	Aluminum alloy	
11	<b>Return plate</b>	Aluminum alloy	Coating
12	<b>Pulley</b>	Aluminum alloy	
13	<b>Pulley</b>	Aluminum alloy	
15	<b>Cover plate</b>	Aluminum alloy	Anodized
16	<b>Table spacer</b> LEKFS32	Aluminum alloy	Anodized
17	<b>Motor</b>	—	
18	<b>Motor adapter</b>	Aluminum alloy	Coating
19	<b>Band stopper</b>	Stainless steel	
20	<b>Dust seal band</b>	Stainless steel	

No.	Description	Material	Note
21	<b>Seal magnet</b>	—	
22	<b>Bearing</b>	—	Stroke 300 mm or more
23	<b>Bearing</b>	—	
24	<b>Magnet</b>	—	
25	<b>Roller assembly</b>	—	Without grease application

### Replacement Parts/Belt

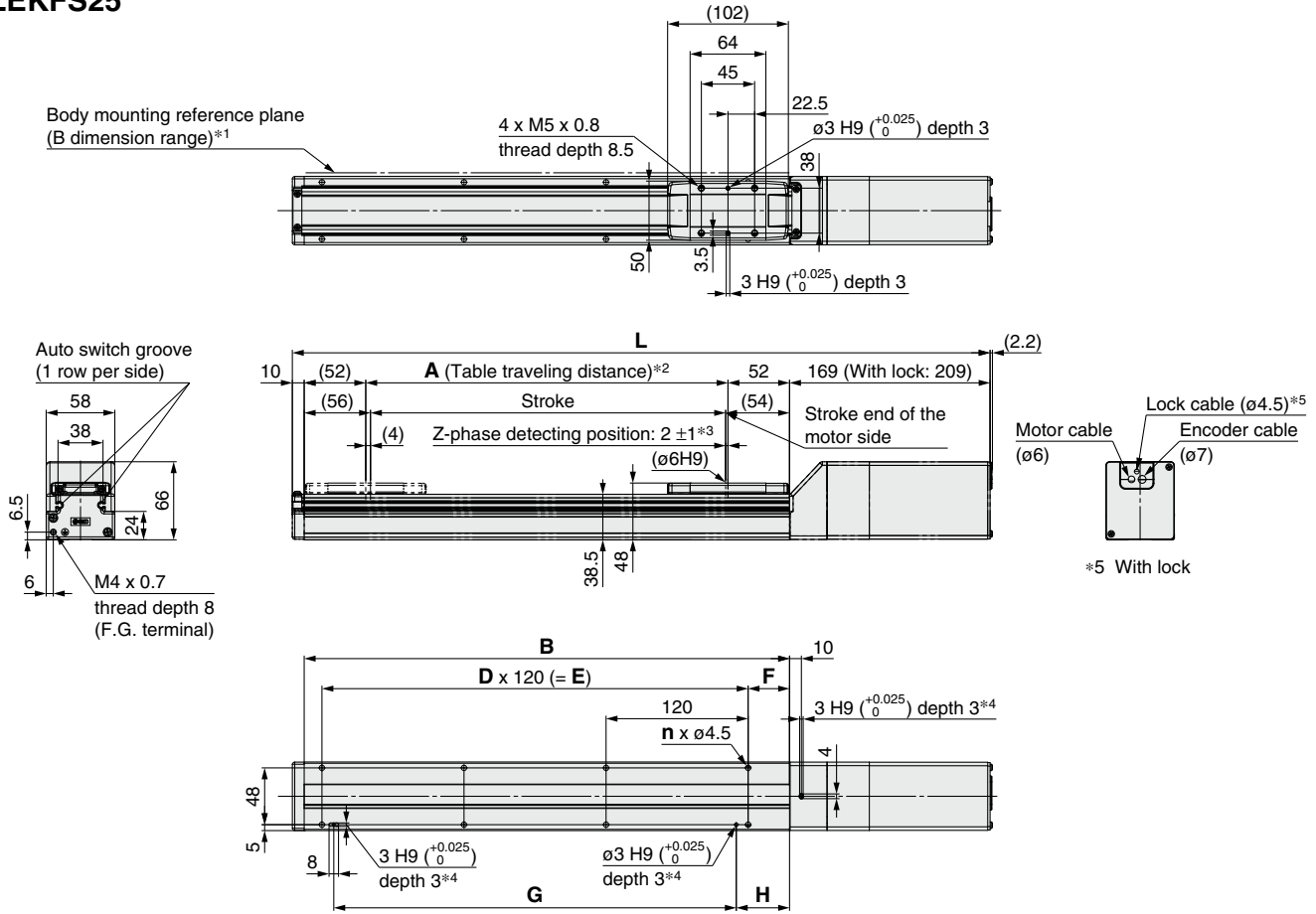
No.	Size	Order no.
14	25	LE-D-6-2
	32	LE-D-6-3
	40	LE-D-6-4

### Replacement Parts/Grease Pack

Applied portion	Order no.
Ball screw	GR-S-010 (10 g) GR-S-020 (20 g)
Rail guide	
Dust seal band (When "Without" is selected for the grease application, grease is applied only on the back side.)	

**Dimensions: In-line Motor**

**LEKFS25**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

**Dimensions**

Model	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
LEKFS25□□-100□	389	429	106	210	4	—	—	35	100	45
LEKFS25□□-200□	489	529	206	310	6	2	240		220	
LEKFS25□□-300□	589	629	306	410	8	3	360		340	
LEKFS25□□-400□	689	729	406	510	8	3	360		340	
LEKFS25□□-500□	789	829	506	610	10	4	480		460	

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC□

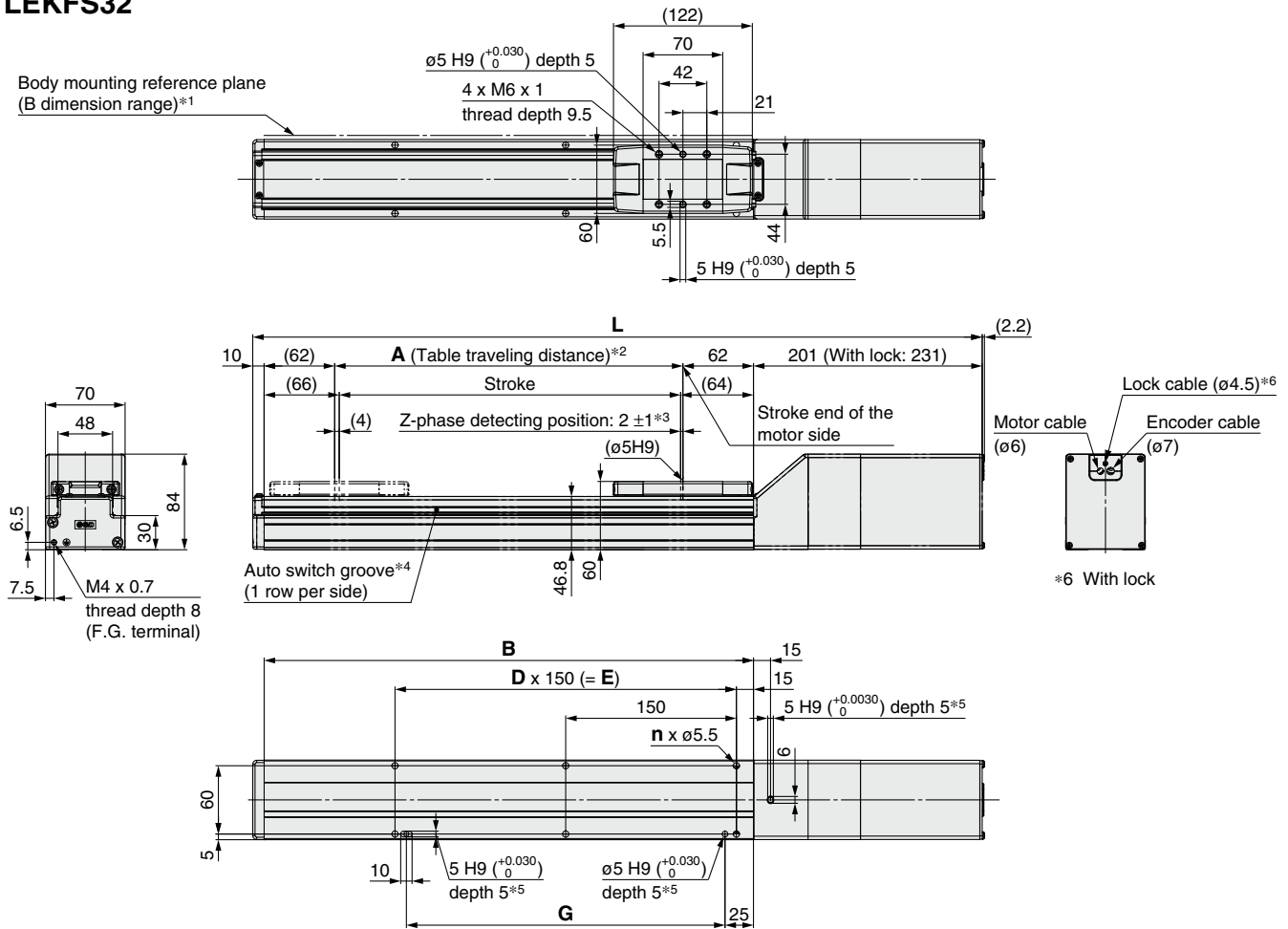
LECSA  
LECS□-T

LECYM  
LECYU

Specific Product Precautions

## Dimensions: In-line Motor

### LEKFS32



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

### Dimensions

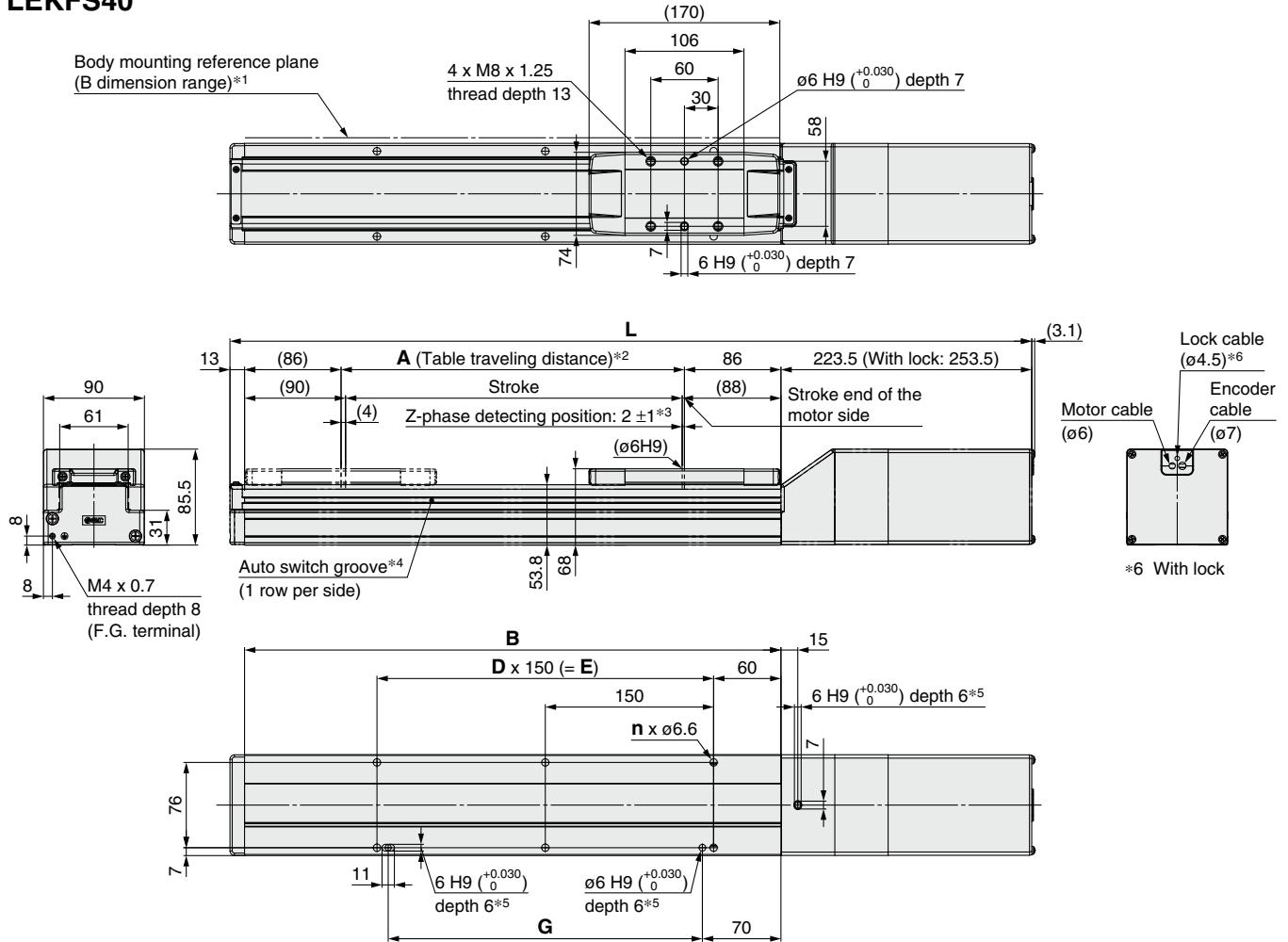
[mm]

Model	L		A	B	n	D	E	G
	Without lock	With lock						
LEKFS32□□-100□	441	471	106	230	4	—	—	130
LEKFS32□□-200□	541	571	206	330	6	2	300	280
LEKFS32□□-300□	641	671	306	430	6	2	300	280
LEKFS32□□-400□	741	771	406	530	8	3	450	430
LEKFS32□□-500□	841	871	506	630	10	4	600	580



**Dimensions: In-line Motor**

**LEKFS40**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BM3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

**Dimensions**

[mm]

Model	L		A	B	n	D	E	G
	Without lock	With lock						
LEKFS40□□-200□	614.5	644.5	206	378	6	2	300	280
LEKFS40□□-300□	714.5	744.5	306	478	6	2	300	280
LEKFS40□□-400□	814.5	844.5	406	578	8	3	450	430
LEKFS40□□-500□	914.5	944.5	506	678	10	4	600	580
LEKFS40□□-600□	1014.5	1044.5	606	778	10	4	600	580

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

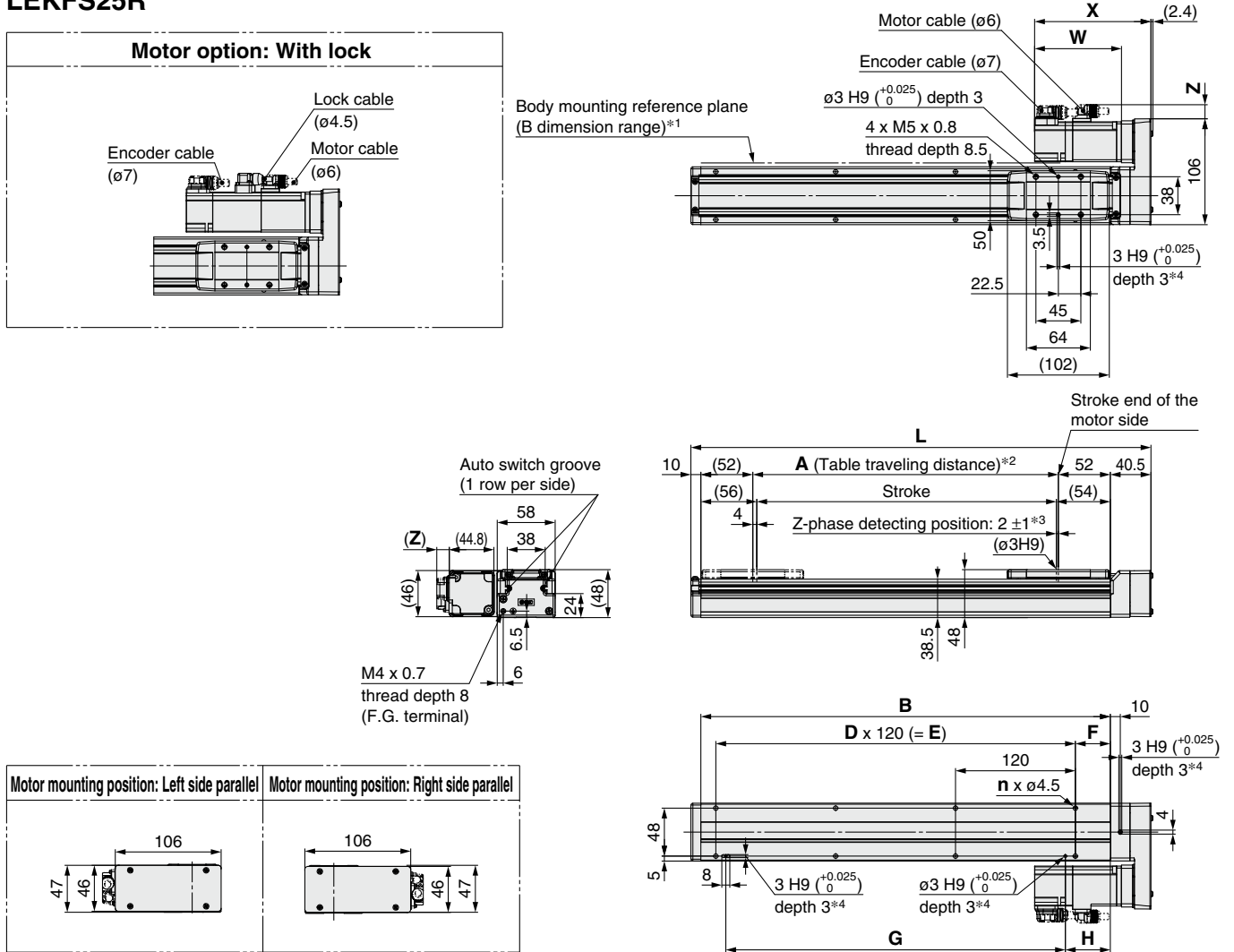
Specific Product Precautions

# LEKFS Series

AC Servo Motor

## Dimensions: Right/Left Side Parallel Motor

### LEKFS25R



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

### Motor Dimensions

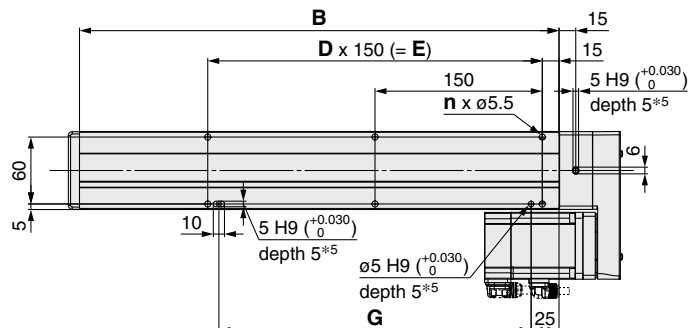
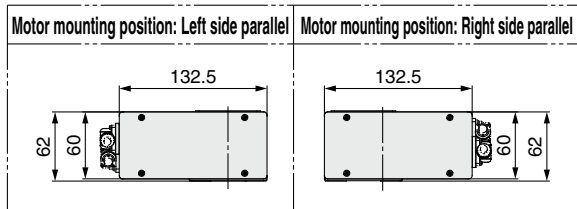
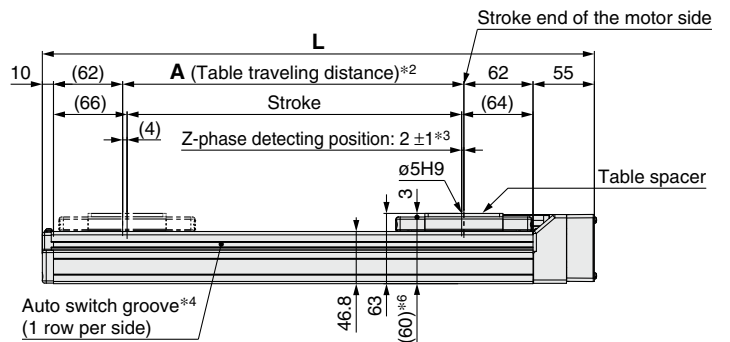
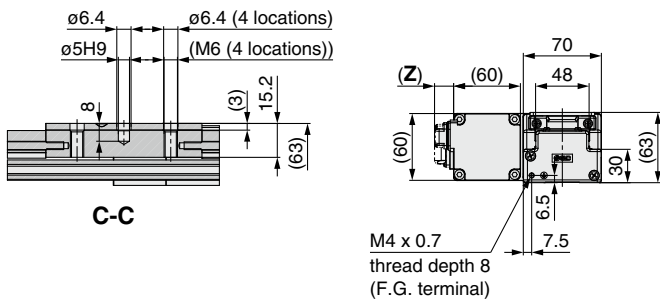
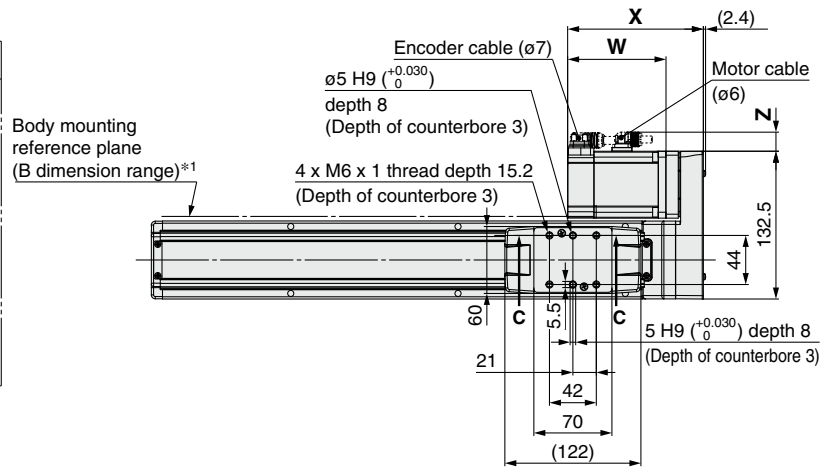
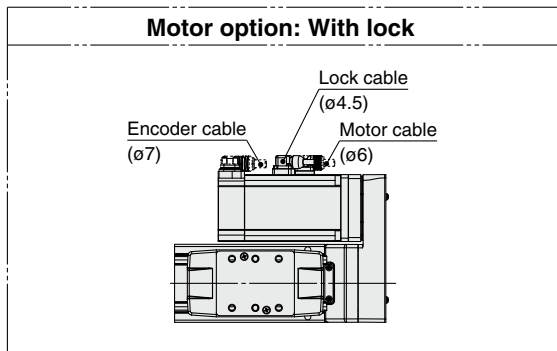
Motor type	X		W		Z	
	Without lock	With lock	Without lock	With lock	Without lock	With lock
S2	116.5	153.4	87	123.9	14.1	15.8
T6	111.9	152.5	82.4	123	14.1	15.8

### Dimensions

Model	L	A	B	n	D	E	F	G		H
								100	220	
LEKFS25□□□-100□	260.5	106	210	4	—	—	—	100	—	45
LEKFS25□□□-200□	360.5	206	310	6	2	240	—	220	—	
LEKFS25□□□-300□	460.5	306	410	8	3	360	35	340	45	
LEKFS25□□□-400□	560.5	406	510	8	3	360		340		
LEKFS25□□□-500□	660.5	506	610	10	4	480		460		

**Dimensions: Right/Left Side Parallel Motor**

**LEKFS32R**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BM Y3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.
- \*6 When the table spacer is removed

**Motor Dimensions**

Motor type	X		W		Z	
	Without lock	With lock	Without lock	With lock	Without lock	With lock
<b>S3</b>	121.7	150.3	88.2	116.8	17.1	17.1
<b>T7</b>	110.1	146.9	76.6	113.4	17.1	17.1

**Dimensions**

Model	L	A	B	n	D	E	G
<b>LEKFS32□□□-100□</b>	295	106	230	4	—	—	130
<b>LEKFS32□□□-200□</b>	395	206	330	6	2	300	280
<b>LEKFS32□□□-300□</b>	495	306	430	6	2	300	280
<b>LEKFS32□□□-400□</b>	595	406	530	8	3	450	430
<b>LEKFS32□□□-500□</b>	695	506	630	10	4	600	580

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC□

LECSA LECS□-T

LECYM LECYU

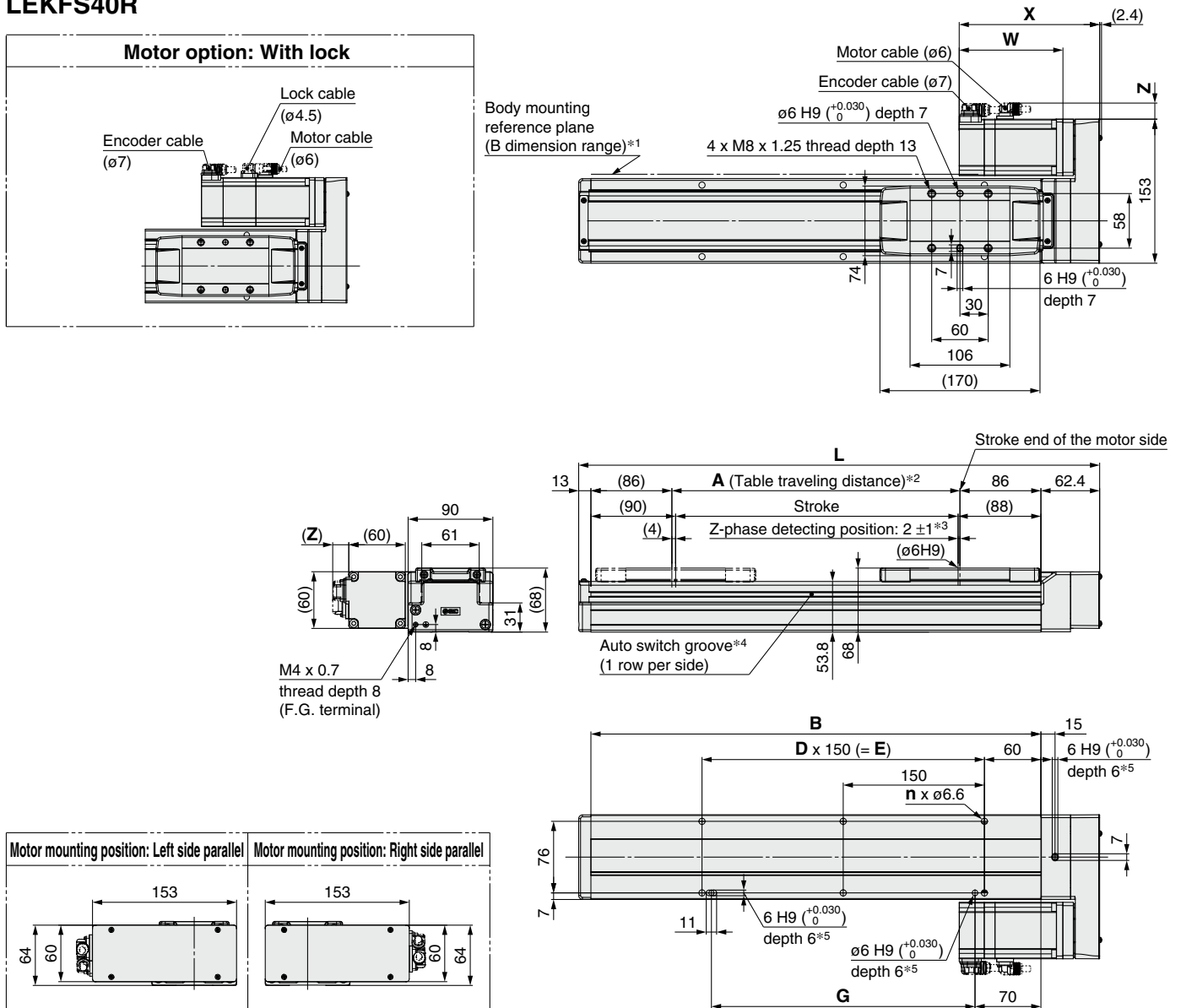
Specific Product Precautions

# LEKFS Series

AC Servo Motor

## Dimensions: Right/Left Side Parallel Motor

### LEKFS40R

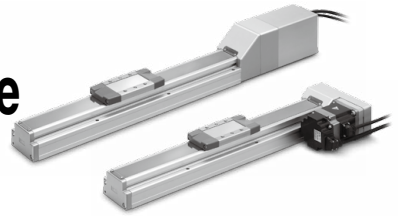


- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

Dimensions	[mm]						
Model	L	A	B	n	D	E	G
LEKFS40□□□-200□	453.4	206	378	6	2	300	280
LEKFS40□□□-300□	553.4	306	478	6	2	300	280
LEKFS40□□□-400□	653.4	406	578	8	3	450	430
LEKFS40□□□-500□	753.4	506	678	10	4	600	580
LEKFS40□□□-600□	853.4	606	778	10	4	600	580

Motor Dimensions	[mm]					
Motor type	X		W		Z	
	Without lock	With lock	Without lock	With lock	Without lock	With lock
S4	149.2	177.8	110.2	138.8	17.1	17.1
T8	137.3	174.1	98.3	135.1	17.1	17.1

# High Rigidity and High Precision Slider Type Ball Screw Drive LEKFS Series LEKFS25, 32, 40



For details, refer to page 128.

LECS Series ▶ p. 50

## How to Order

**LEKFS 32 R V7 B - 200 B N - S 3 M2**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

### ① Size

25
32
40

### ② Motor mounting position

Nil	In-line
R	Right side parallel
L	Left side parallel

### ③ Motor type

Symbol	Type	Output [W]	① Size	⑩ Driver type	Compatible drivers
V6*1	AC servo motor (Absolute encoder)	100	25	M2	LECYM2-V5
V7		200	32	U2	LECYU2-V5
V8		400	40	M2	LECYM2-V7
				U2	LECYU2-V7
				M2	LECYM2-V8
				U2	LECYU2-V8

\*1 For motor type V6, the compatible driver part number suffix is V5.

### ④ Lead [mm]

Symbol	LEKFS25	LEKFS32	LEKFS40
H	20	24	30
A	12	16	20
B	6	8	10

### ⑤ Stroke [mm]

100	100
to	to
600	600

### ⑥ Motor option

Nil	Without option
B	With lock

### ⑦ Grease application (Seal band part)

Nil	With
N	Without (Roller specification)

### ⑧ Cable type

Nil	Without cable
S	Standard cable
R	Robotic cable (Flexible cable)

### ⑨ Actuator cable length [m]

Nil	Without cable
3	3
5	5
A	10
C	20

### ⑩ Driver type

	Compatible drivers	Power supply voltage [V]
Nil	Without driver	—
M2	LECYM2-V□	200 to 230
U2	LECYU2-V□	200 to 230

### ⑪ I/O cable length [m]\*1

Nil	Without cable
H	Without cable (Connector only)
1	1.5

\*1 When "Nil: Without driver" is selected for the driver type, only "Nil: Without cable" can be selected. Refer to page 123 if an I/O cable is required. (Options are shown on page 123.)

### Applicable Stroke Table

●: Standard

Model \ Stroke [mm]	100	200	300	400	500	600
LEKFS25	●	●	●	●	●	—
LEKFS32	●	●	●	●	●	—
LEKFS40	—	●	●	●	●	●

\* Please contact SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 70 to 73.

### Compatible Drivers

Driver type	MECHATROLINK-II type	MECHATROLINK-III type
Series	LECYM	LECYU
Applicable network	MECHATROLINK-II	MECHATROLINK-III
Control encoder	Absolute 20-bit encoder	
Communication device	USB communication, RS-422 communication	
Power supply voltage [V]	200 to 230 VAC (50/60 Hz)	
Reference page	116	

Model Selection  
LEKFS  
Battery-less Absolute  
LEKFS  
AC Servo Motor  
LEKFS  
Auto Switch  
JXC51/61  
JXC□  
LECSA  
LECS□-T  
LECYM  
LECYU  
Specific Product Precautions

## Specifications

### AC Servo Motor

Model			LEKFS25□V6			LEKFS32□V7			LEKFS40□V8			
Actuator specifications	Stroke [mm]		100 to 500			100 to 500			200 to 600			
	Work load [kg] <sup>*1</sup>	Horizontal	10	20	20	30	40	45	30	50	60	
		Vertical	4	8	15	5	10	20	7	15	30	
	Speed <sup>*2</sup> [mm/s]	Stroke range	Up to 400	1500	900	450	1500	1000	500	1500	1000	500
			401 to 500	1200	720	360	1500	1000	500	1500	1000	500
			501 to 600	—	—	—	—	—	—	—	1500	1000
	Max. acceleration/deceleration [mm/s <sup>2</sup> ]		20000 (Refer to pages 29 to 31 for limit according to work load and duty ratio.)									
	Positioning repeatability [mm]		±0.01									
	Lost motion [mm] <sup>*3</sup>		0.05 or less									
	Lead [mm]		20	12	6	24	16	8	30	20	10	
	Impact/Vibration resistance [m/s <sup>2</sup> ] <sup>*4</sup>		50/20									
	Actuation type		Ball screw (LEKFS□), Ball screw + Belt (LEKFS□R/L)									
Guide type		Linear guide										
Operating temperature range [°C]		5 to 40										
Operating humidity range [%RH]		90 or less (No condensation)										
Electric specifications	Motor output/Size		100 W/□40			200 W/□60			400 W/□60			
	Motor type		AC servo motor (100/200 VAC)									
	Encoder		Absolute 20-bit encoder (Resolution: 1048576 p/rev)									
	Power [W] <sup>*5</sup>		Max. power 445			Max. power 725			Max. power 1275			
Lock unit specifications	Type <sup>*6</sup>		Non-magnetizing lock									
	Holding force [N]		78	131	255	131	197	385	220	330	660	
	Power consumption at 20°C [W]		5.5			6			6			
	Rated voltage [V]		24 VDC (0/-10%)									

\*1 For details, refer to the "Speed-Work Load Graph (Guide)" on page 36.

\*2 The allowable speed changes according to the stroke.

\*3 A reference value for correcting errors in reciprocal operation

\*4 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

\*5 Indicates the max. power during operation (including the driver). When selecting the power supply capacity, refer to the power supply capacity in the operation manual of each driver.

\*6 Only when motor option "With lock" is selected

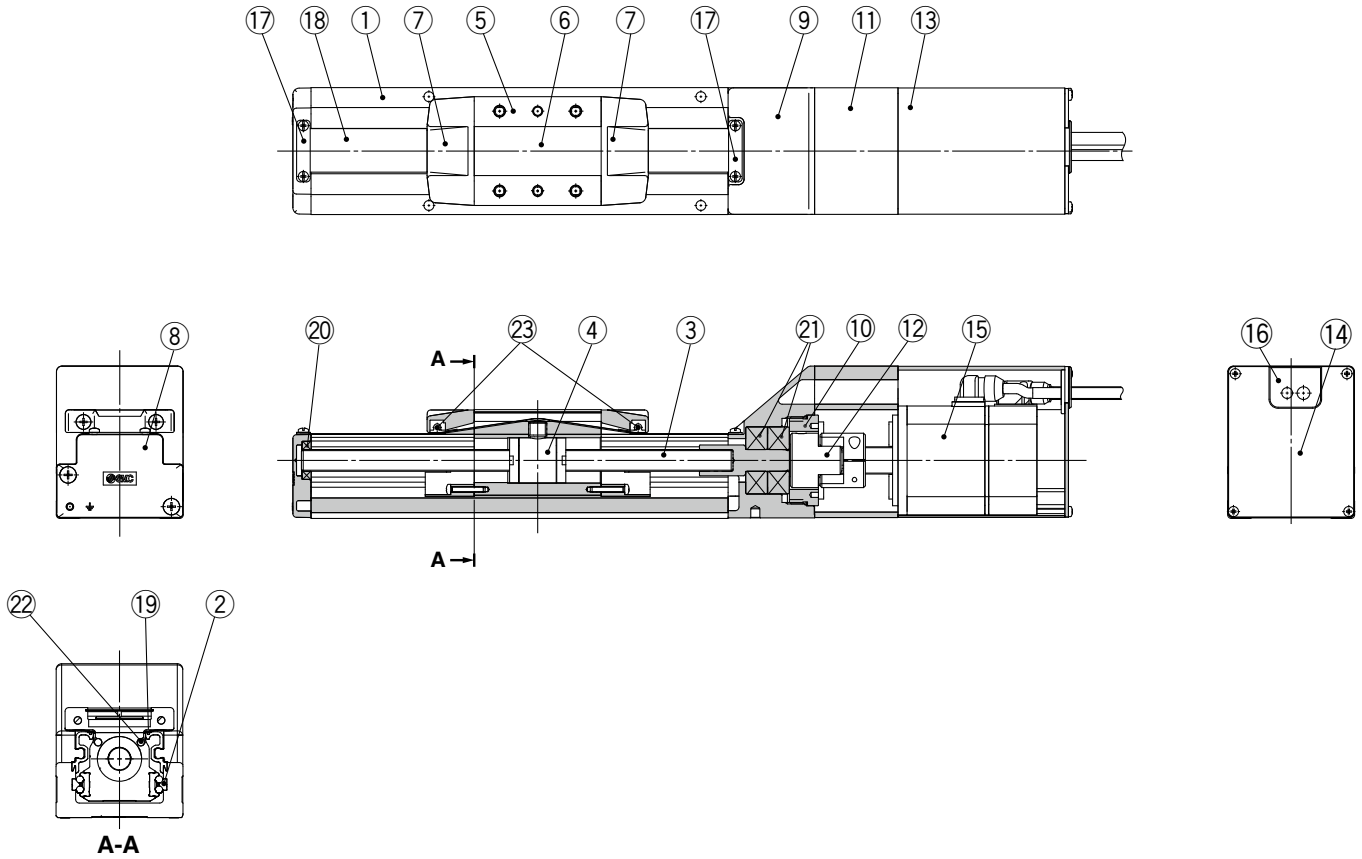
## Weight

Series	LEKFS25□V6				
Stroke [mm]	100	200	300	400	500
Motor type	2.2	2.5	2.8	3	3.3
Additional weight with lock [kg]	0.3				

Series	LEKFS32□V7				
Stroke [mm]	100	200	300	400	500
Motor type	3.6	4.0	4.5	4.9	5.3
Additional weight with lock [kg]	0.7				

Series	LEKFS40□V8				
Stroke [mm]	200	300	400	500	600
Motor type	6.3	6.9	7.5	8.1	8.7
Additional weight with lock [kg]	0.7				

**Construction: In-line Motor**



**Component Parts**

No.	Description	Material	Note
1	<b>Body</b>	Aluminum alloy	Anodized
2	<b>Rail guide</b>	—	
3	<b>Ball screw shaft</b>	—	
4	<b>Ball screw nut</b>	—	
5	<b>Table</b>	Aluminum alloy	Anodized
6	<b>Blanking plate</b>	Aluminum alloy	Anodized
7	<b>Seal band holder</b>	Synthetic resin	
8	<b>Housing A</b>	Aluminum die-casted	Coating
9	<b>Housing B</b>	Aluminum die-casted	Coating
10	<b>Bearing stopper</b>	Aluminum alloy	
11	<b>Motor mount</b>	Aluminum alloy	Coating
12	<b>Coupling</b>	—	
13	<b>Motor cover</b>	Aluminum alloy	Anodized
14	<b>End cover</b>	Aluminum alloy	Anodized
15	<b>Motor</b>	—	

No.	Description	Material	Note
16	<b>Rubber bushing</b>	NBR	
17	<b>Band stopper</b>	Stainless steel	
18	<b>Dust seal band</b>	Stainless steel	
19	<b>Seal magnet</b>	—	
20	<b>Bearing</b>	—	Stroke 300 mm or more
21	<b>Bearing</b>	—	
22	<b>Magnet</b>	—	
23	<b>Roller assembly</b>	—	Without grease application

**Replacement Parts/Grease Pack**

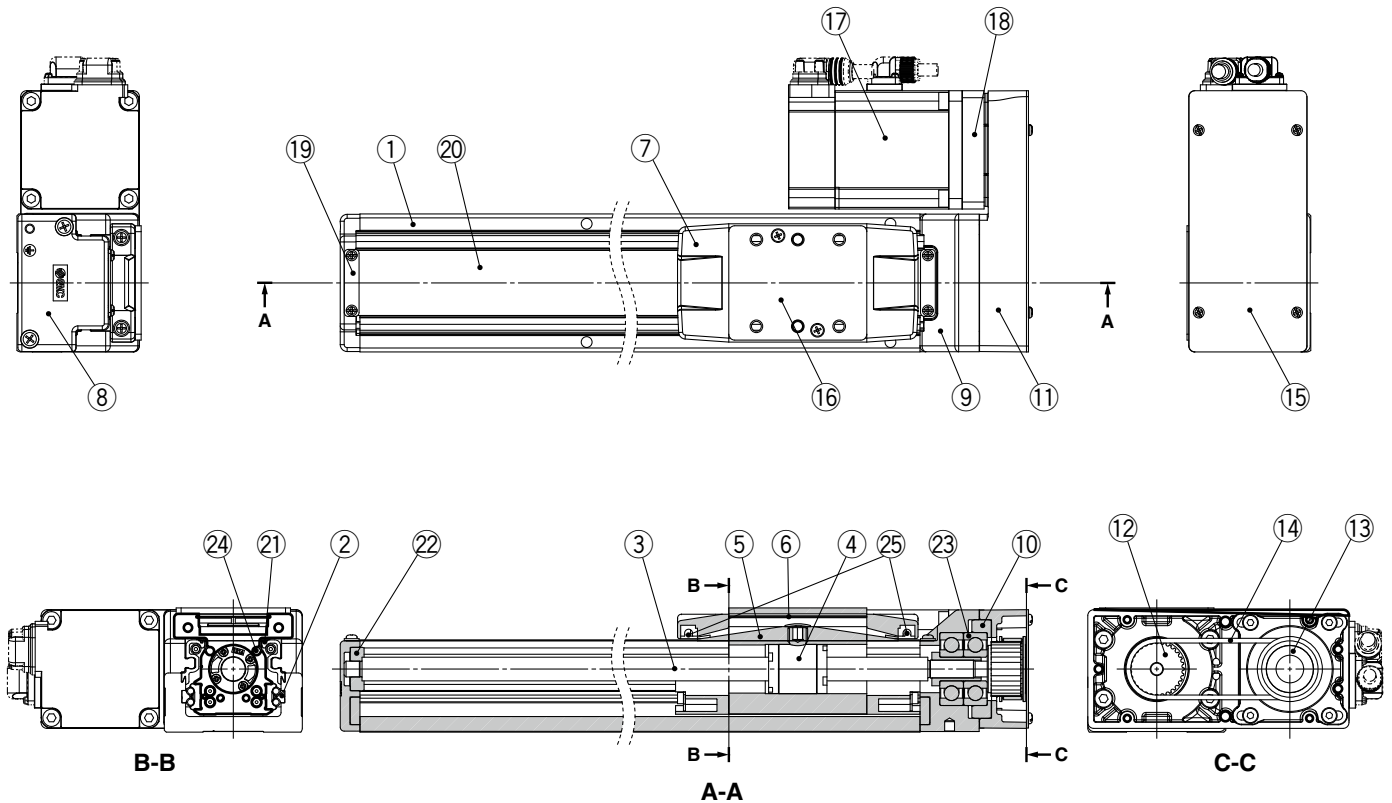
Applied portion	Order no.
Ball screw	GR-S-010 (10 g) GR-S-020 (20 g)
Rail guide	
Dust seal band (When "Without" is selected for the grease application, grease is applied only on the back side.)	

Model Selection  
 Battery-less Absolute **LEKFS**  
 AC Servo Motor **LEKFS**  
 Auto Switch  
 JXC51/61  
 JXC  
 LECSA  
 LECS□-T  
 LECYM  
 LECYU  
 Specific Product Precautions

# LEKFS Series

AC Servo Motor

## Construction: Right/Left Side Parallel Motor



### Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Anodized
2	Rail guide	—	
3	Ball screw shaft	—	
4	Ball screw nut	—	
5	Table	Aluminum alloy	Anodized
6	Blanking plate	Aluminum alloy	Anodized
7	Seal band holder	Synthetic resin	
8	Housing A	Aluminum die-casted	Coating
9	Housing B	Aluminum die-casted	Coating
10	Bearing stopper	Aluminum alloy	
11	Return plate	Aluminum alloy	Coating
12	Pulley	Aluminum alloy	
13	Pulley	Aluminum alloy	
15	Cover plate	Aluminum alloy	Anodized
16	Table spacer	LEKFS32 Aluminum alloy	Anodized
17	Motor	—	
18	Motor adapter	Aluminum alloy	Coating
19	Band stopper	Stainless steel	
20	Dust seal band	Stainless steel	

No.	Description	Material	Note
21	Seal magnet	—	
22	Bearing	—	Stroke 300 mm or more
23	Bearing	—	
24	Magnet	—	
25	Roller assembly	—	Without grease application

### Replacement Parts/Belt

No.	Size	Order no.
14	25	LE-D-6-2
	32	LE-D-6-3
	40	LE-D-6-4

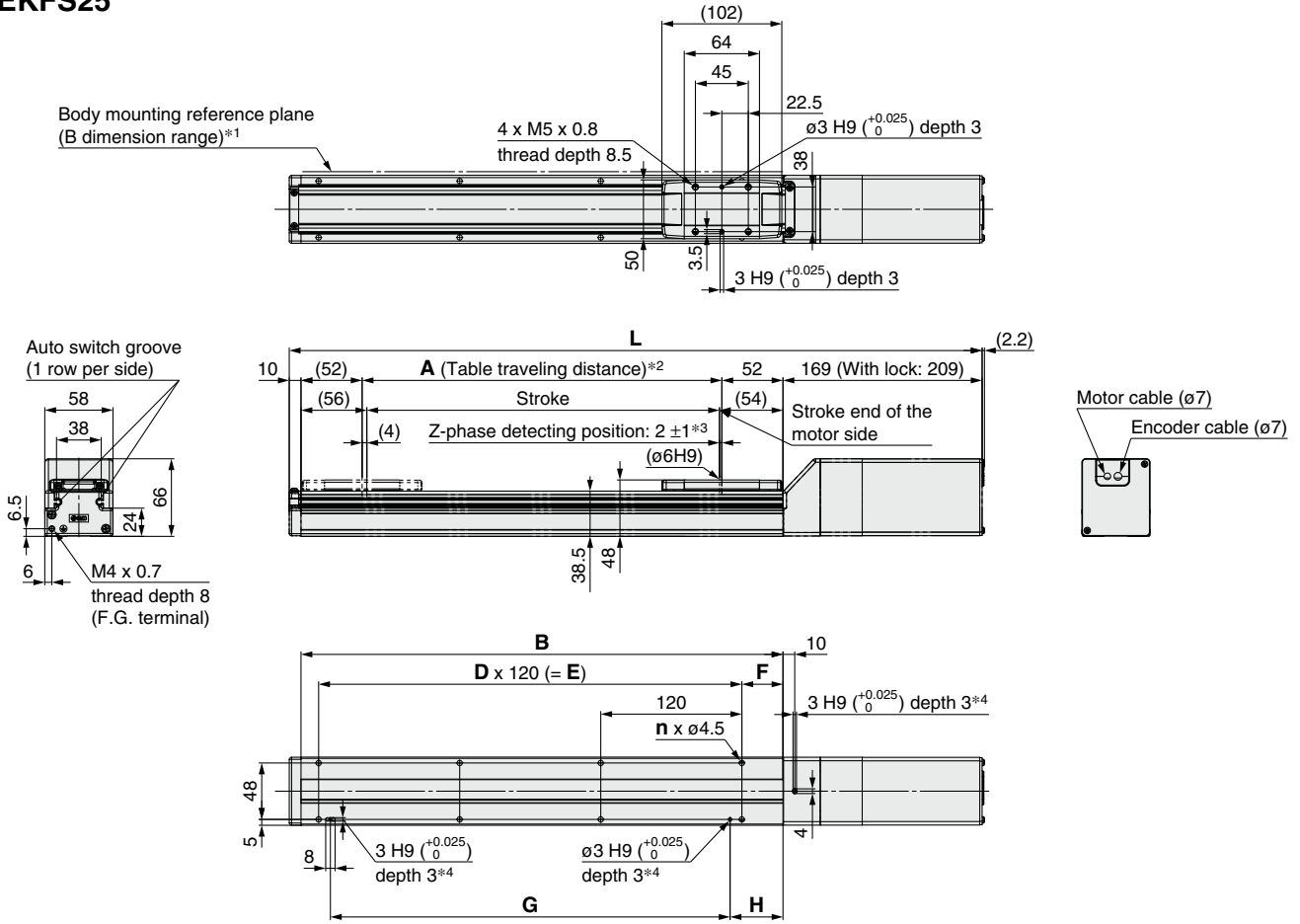
### Replacement Parts/Grease Pack

Applied portion	Order no.
Ball screw	GR-S-010 (10 g) GR-S-020 (20 g)
Rail guide	
Dust seal band (When "Without" is selected for the grease application, grease is applied only on the back side.)	



**Dimensions: In-line Motor**

**LEKFS25**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

**Dimensions**

Model	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
LEKFS25□□-100□	389	429	106	210	4	—	—	35	100	45
LEKFS25□□-200□	489	529	206	310	6	2	240		220	
LEKFS25□□-300□	589	629	306	410	8	3	360		340	
LEKFS25□□-400□	689	729	406	510	8	3	360		340	
LEKFS25□□-500□	789	829	506	610	10	4	480		460	

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC□

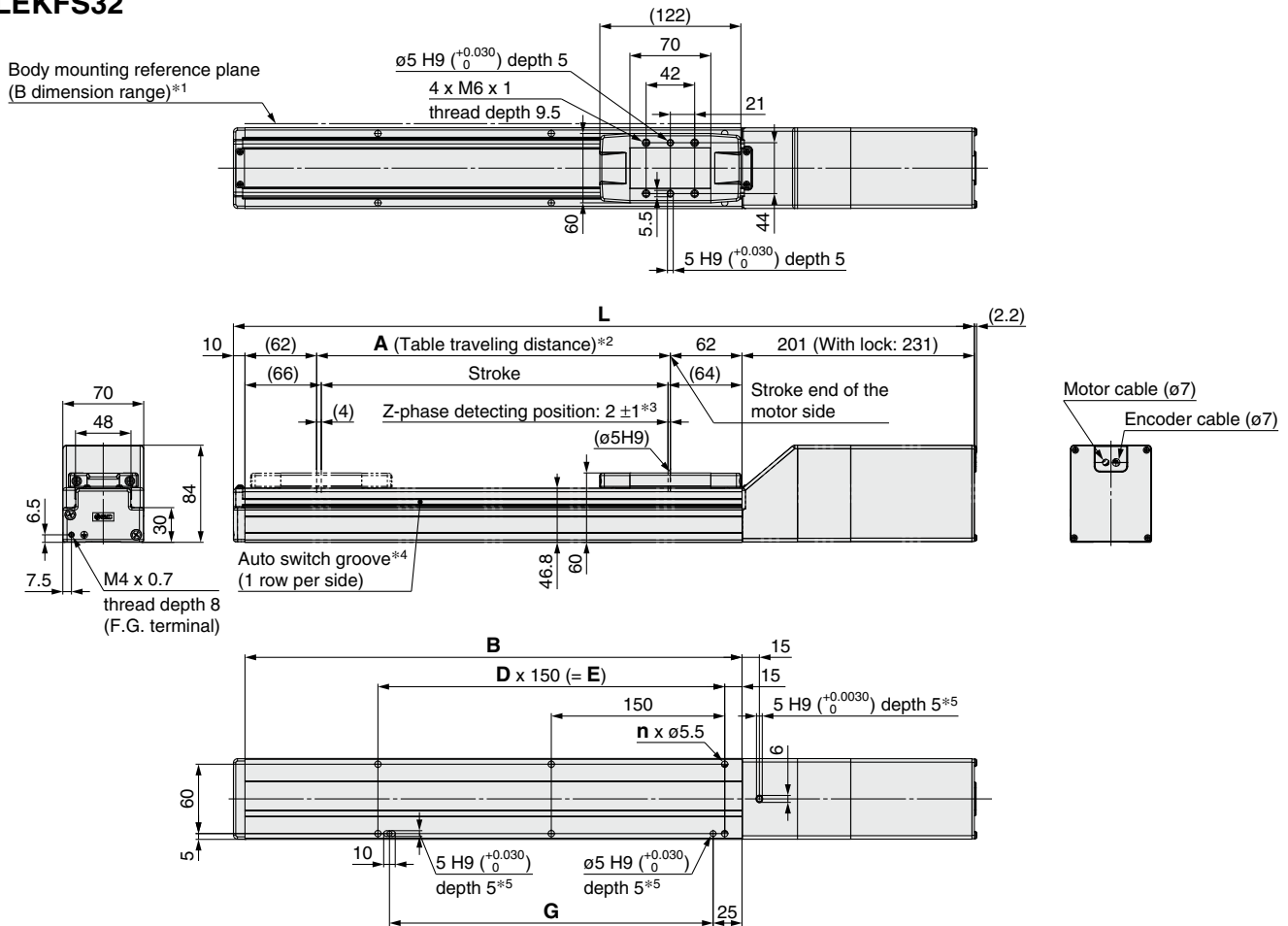
LECSA  
LECS□-T

LECYM  
LECYU

Specific Product Precautions

## Dimensions: In-line Motor

### LEKFS32



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BM3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

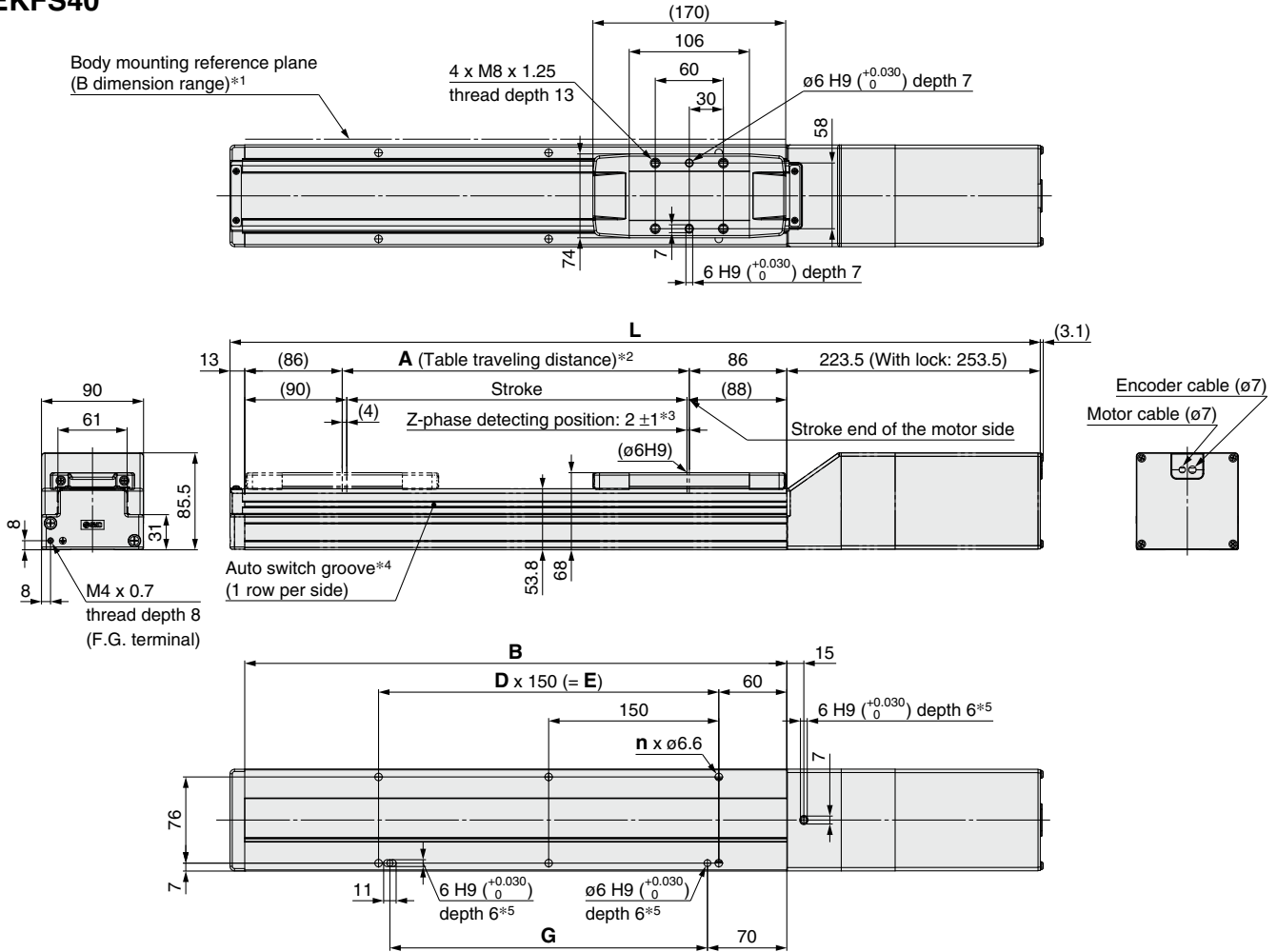
### Dimensions

[mm]

Model	L		A	B	n	D	E	G
	Without lock	With lock						
LEKFS32□□-100□	441	471	106	230	4	—	—	130
LEKFS32□□-200□	541	571	206	330	6	2	300	280
LEKFS32□□-300□	641	671	306	430	6	2	300	280
LEKFS32□□-400□	741	771	406	530	8	3	450	430
LEKFS32□□-500□	841	871	506	630	10	4	600	580

**Dimensions: In-line Motor**

**LEKFS40**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BM Y3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

**Dimensions**

[mm]

Model	L		A	B	n	D	E	G
	Without lock	With lock						
LEKFS40□□-200□	614.5	644.5	206	378	6	2	300	280
LEKFS40□□-300□	714.5	744.5	306	478	6	2	300	280
LEKFS40□□-400□	814.5	844.5	406	578	8	3	450	430
LEKFS40□□-500□	914.5	944.5	506	678	10	4	600	580
LEKFS40□□-600□	1014.5	1044.5	606	778	10	4	600	580

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

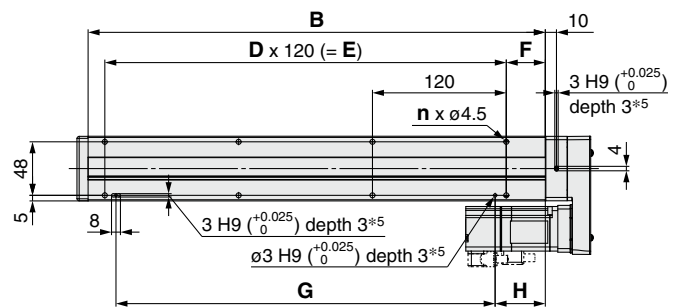
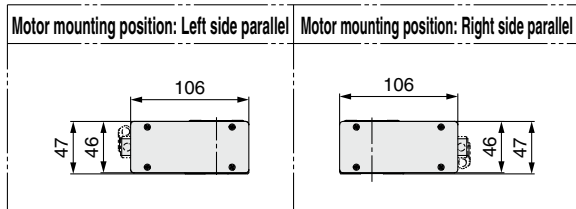
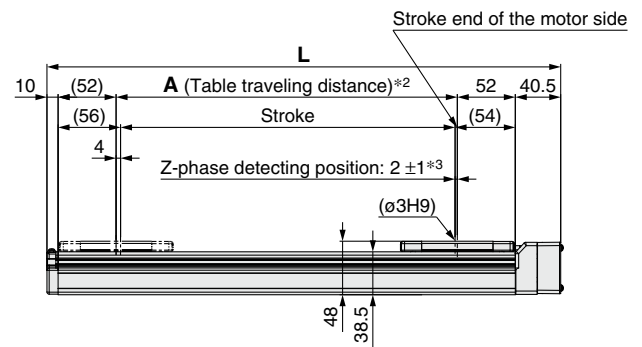
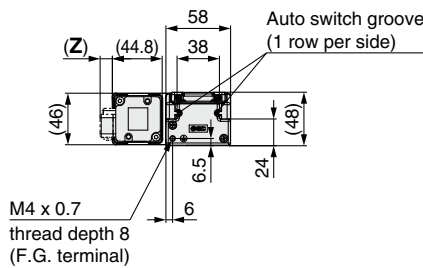
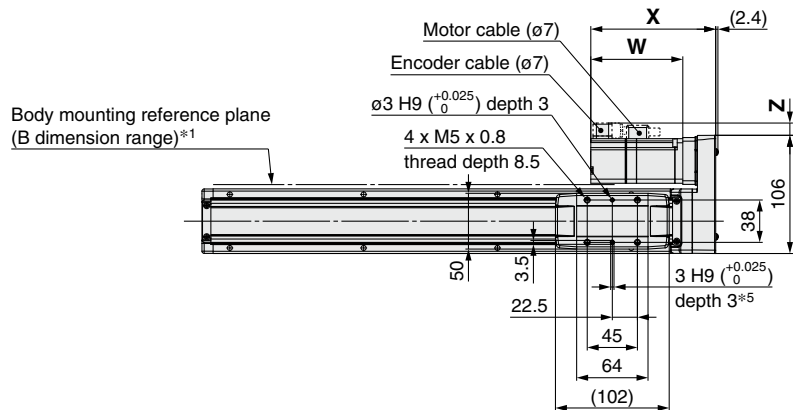
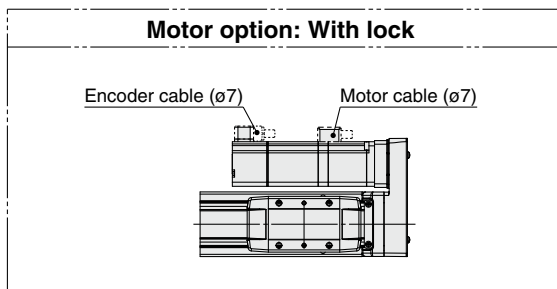
Specific Product Precautions

# LEKFS Series

AC Servo Motor

## Dimensions: Right/Left Side Parallel Motor

### LEKFS25R



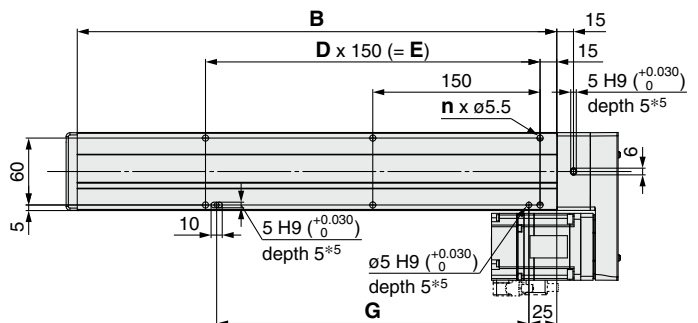
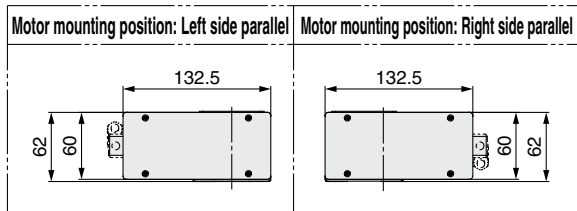
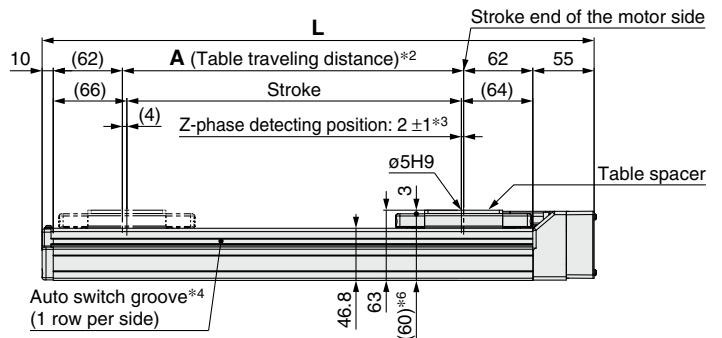
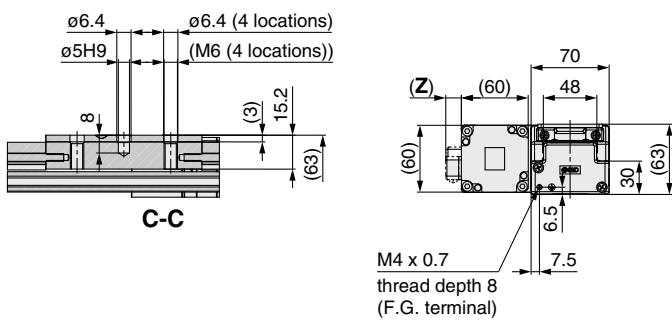
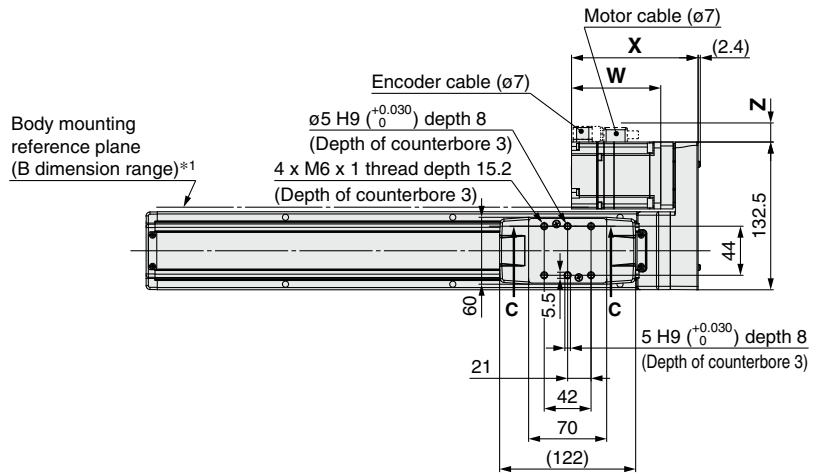
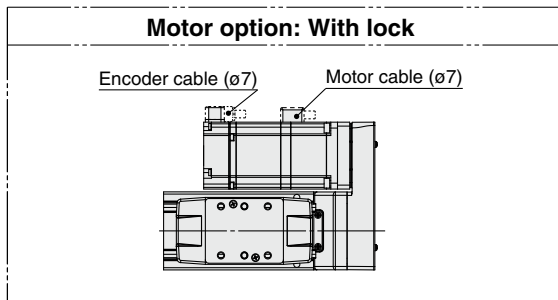
- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

Motor Dimensions		[mm]				
Motor type	X		W		Z	
	Without lock	With lock	Without lock	With lock	Without lock	With lock
V6	112	157	82.5	127.5	11	

Dimensions		[mm]								
Model	L	A	B	n	D	E	F	G	H	
LEKFS25□□□-100□	260.5	106	210	4	—	—		100		
LEKFS25□□□-200□	360.5	206	310	6	2	240		220		
LEKFS25□□□-300□	460.5	306	410	8	3	360	35	340	45	
LEKFS25□□□-400□	560.5	406	510	8	3	360		340		
LEKFS25□□□-500□	660.5	506	610	10	4	480		460		

**Dimensions: Right/Left Side Parallel Motor**

**LEKFS32R**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.
- \*6 When the table spacer is removed

**Motor Dimensions** [mm]

Motor type	X		W		Z	
	Without lock	With lock	Without lock	With lock	Without lock	With lock
V7	113.5	153.5	80	120	14	

**Dimensions** [mm]

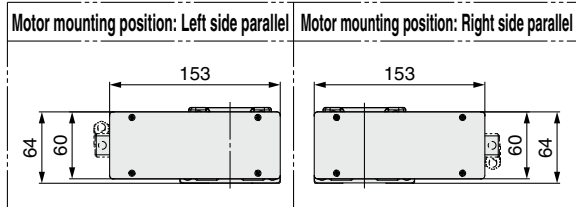
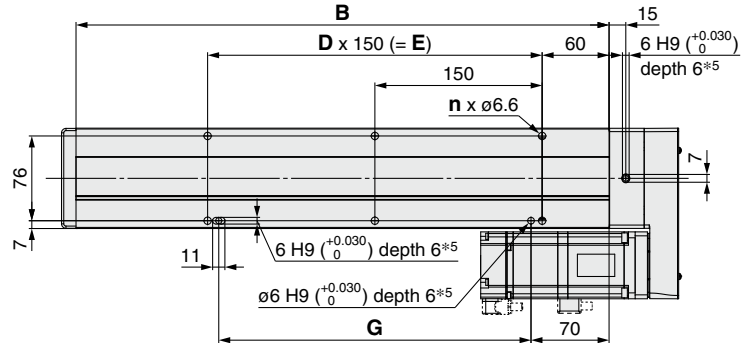
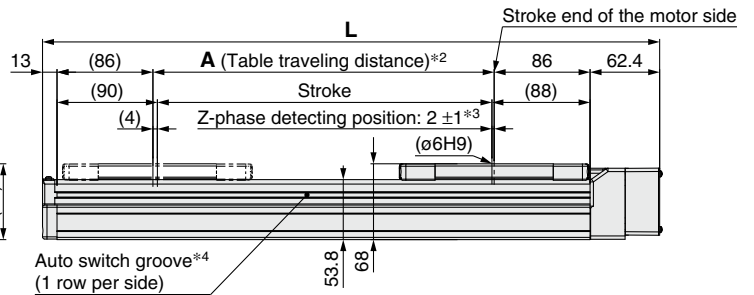
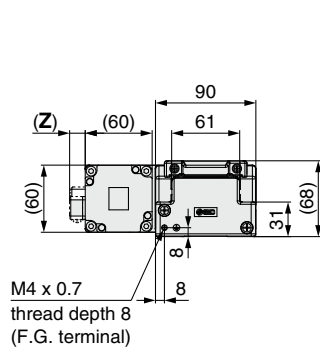
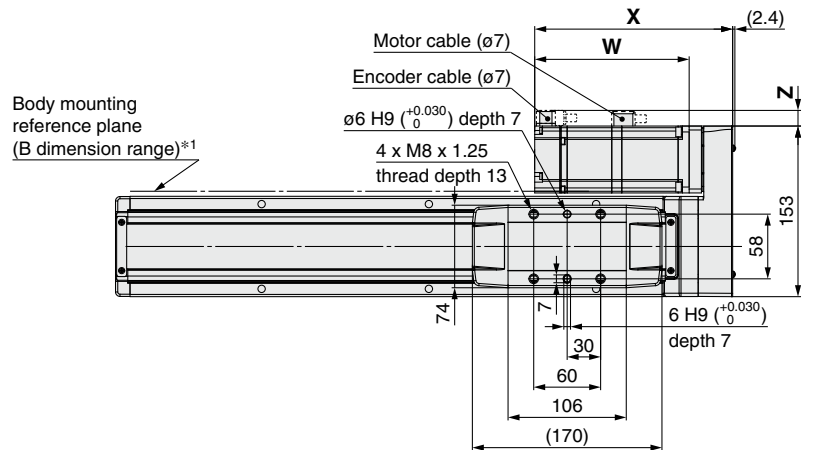
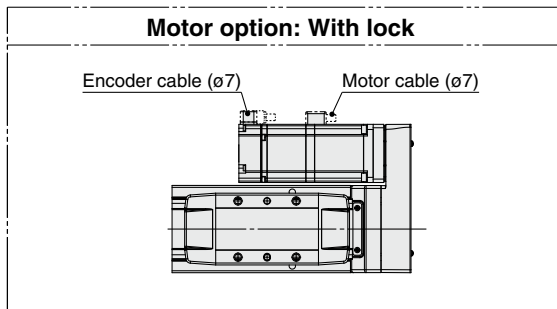
Model	L	A	B	n	D	E	G
LEKFS32□□□-100□	295	106	230	4	—	—	130
LEKFS32□□□-200□	395	206	330	6	2	300	280
LEKFS32□□□-300□	495	306	430	6	2	300	280
LEKFS32□□□-400□	595	406	530	8	3	450	430
LEKFS32□□□-500□	695	506	630	10	4	600	580

# LEKFS Series

AC Servo Motor

## Dimensions: Right/Left Side Parallel Motor

### LEKFS40R



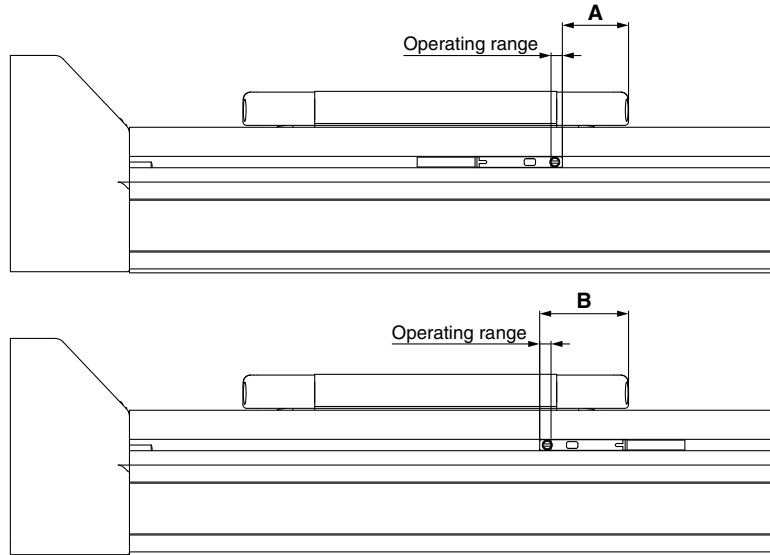
- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane.  
Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 This is the distance within which the table can move when it returns to origin. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 The Z-phase first detecting position from the stroke end of the motor side
- \*4 A switch spacer (BM3-016) is required to secure auto switches. Please order it separately.
- \*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

Dimensions	[mm]						
Model	L	A	B	n	D	E	G
LEKFS40□□□-200□	453.4	206	378	6	2	300	280
LEKFS40□□□-300□	553.4	306	478	6	2	300	280
LEKFS40□□□-400□	653.4	406	578	8	3	450	430
LEKFS40□□□-500□	753.4	506	678	10	4	600	580
LEKFS40□□□-600□	853.4	606	778	10	4	600	580

Motor Dimensions	[mm]					
Motor type	X		W		Z	
	Without lock	With lock	Without lock	With lock	Without lock	With lock
V8	137.5	177.5	98.5	138.5	14	

# LEKFS Series Auto Switch Mounting

## Auto Switch Mounting Position



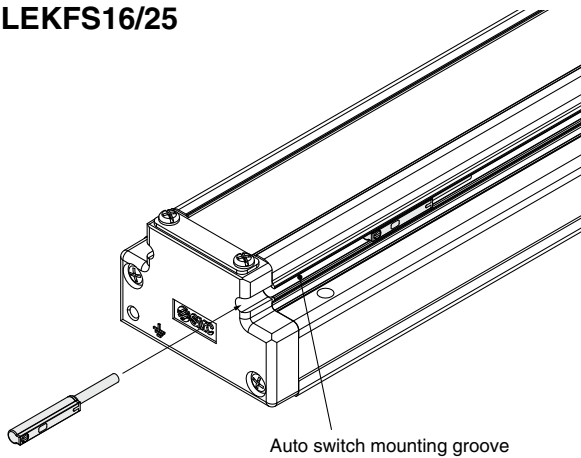
**Table 1 Auto switch mounting dimensions** [mm]

Model	Size	A	B	Operating range
LEKFS	16	12.5	24.5	3.0
	25	17.5	29.5	3.0
	32	26.3	39.1	3.4
	40	32.2	45.4	3.6

- \* The applicable auto switch is D-M9 (N/P/B) (W) (M/L/Z).
- \* The operating range is a guideline including hysteresis, not meant to be guaranteed. There may be large variations depending on the ambient environment.
- \* Adjust the auto switch after confirming the operating conditions in the actual setting.

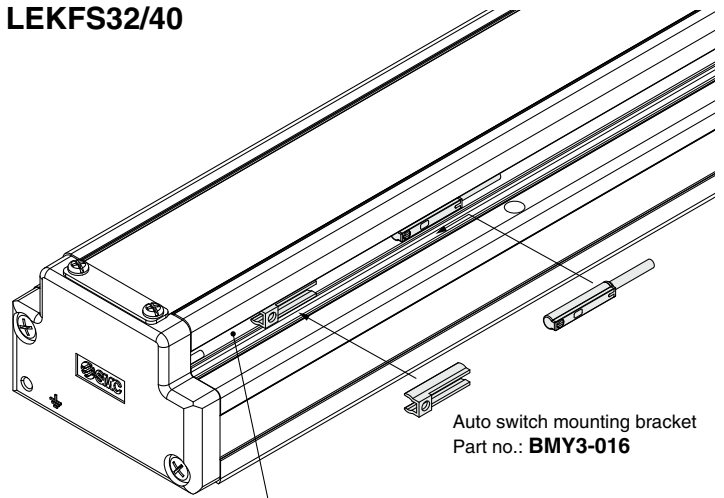
## Auto Switch Mounting

### LEKFS16/25



Auto switch mounting groove

### LEKFS32/40



Auto switch mounting bracket  
Part no.: **BMY3-016**

Auto switch mounting groove

Auto Switch Mounting Screw

Tightening torque [N·m]
0.1 to 0.15

- \* The applicable auto switch is D-M9 (N/P/B) (W) (M/L/Z).
- \* When tightening the auto switch mounting screw (included with the auto switch), use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm.
- \* Prepare an auto switch mounting bracket (BMY3-016) when mounting the auto switch on to the LEKFS32/40.

# Solid State Auto Switch Direct Mounting Type D-M9N/D-M9P/D-M9B



Refer to the SMC website for details on products that are compliant with international standards.

## Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.



## Caution

### Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

## Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)			
Auto switch model	D-M9N	D-M9P	D-M9B
Electrical entry direction	In-line		
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, Relay, PLC		24 VDC relay, PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)		—
Current consumption	10 mA or less		—
Load voltage	28 VDC or less	—	24 VDC (10 to 28 VDC)
Load current	40 mA or less		2.5 to 40 mA
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)		4 V or less
Leakage current	100 μA or less at 24 VDC		0.8 mA or less
Indicator light	Red LED illuminates when turned ON.		
Standard	CE marking, RoHS		

## Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N	D-M9P	D-M9B
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm <sup>2</sup> ]	0.15		
	Strand diameter [mm]	0.05		
Min. bending radius [mm] (Reference values)		17		

\* Refer to the **Web Catalog** for solid state auto switch common specifications.

\* Refer to the **Web Catalog** for lead wire lengths.

## Weight

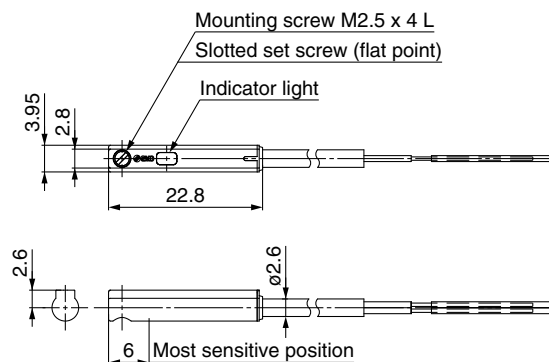
[g]

Auto switch model		D-M9N	D-M9P	D-M9B
Lead wire length	0.5 m (Nil)	8	—	7
	1 m (M)	14	—	13
	3 m (L)	41	—	38
	5 m (Z)	68	—	63

## Dimensions

[mm]

### D-M9□





# Normally Closed Solid State Auto Switch Direct Mounting Type D-M9NE(V)/D-M9PE(V)/D-M9BE(V)

Refer to the SMC website for details on products that are compliant with international standards.

PLC: Programmable Logic Controller

## Grommet

- Output signal turns on when no magnetic force is detected.
- Can be used for the actuator adopted by the solid state auto switch D-M9 series (excluding special order products)



## Caution

### Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

## Auto Switch Specifications

D-M9□E, D-M9□EV (With indicator light)						
Auto switch model	D-M9NE	D-M9NEV	D-M9PE	D-M9PEV	D-M9BE	D-M9BEV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standard	CE marking, RoHS					

## Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm <sup>2</sup> ]	0.15		
	Strand diameter [mm]	0.05		
Min. bending radius [mm] (Reference values)		17		

- \* Refer to the **Web Catalog** for solid state auto switch common specifications.
- \* Refer to the **Web Catalog** for lead wire lengths.

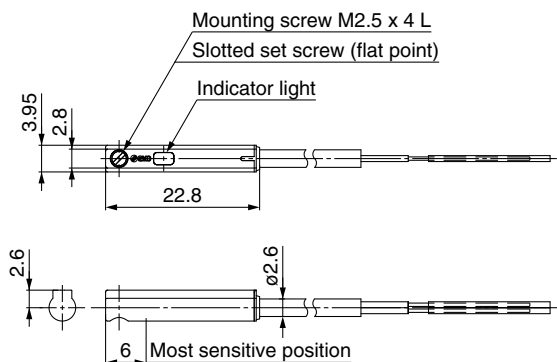
## Weight

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Lead wire length	0.5 m (Nil)	8	7	7
	1 m (M)*1	14	13	13
	3 m (L)	41	38	38
	5 m (Z)*1	68	63	63

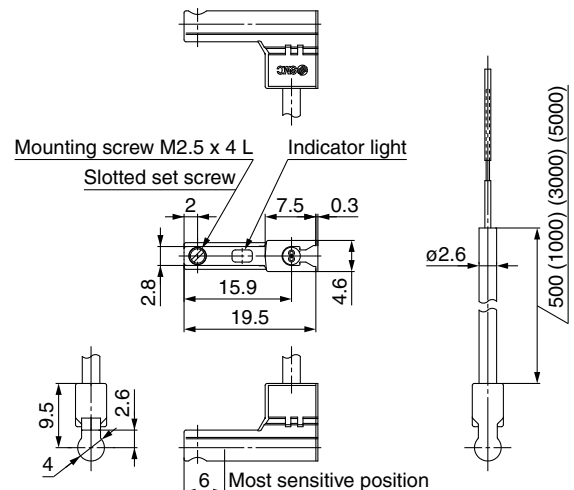
\*1 The 1 m and 5 m options are produced upon receipt of order.

## Dimensions

### D-M9□E



### D-M9□EV



# 2-Color Indicator Solid State Auto Switch Direct Mounting Type

## D-M9NW/D-M9PW/D-M9BW



Refer to the SMC website for details on products that are compliant with international standards.

### Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.
- The proper operating range can be determined by the color of the light. (Red → Green ← Red)



### Caution

#### Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

### Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)			
Auto switch model	D-M9NW	D-M9PW	D-M9BW
Electrical entry direction	In-line		
Wiring type	3-wire		2-wire
Output type	NPN	PNP	—
Applicable load	IC circuit, Relay, PLC		24 VDC relay, PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)		—
Current consumption	10 mA or less		
Load voltage	28 VDC or less	—	24 VDC (10 to 28 VDC)
Load current	40 mA or less		2.5 to 40 mA
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)		4 V or less
Leakage current	100 μA or less at 24 VDC		0.8 mA or less
Indicator light	Operating range ..... Red LED illuminates. Proper operating range ..... Green LED illuminates.		
Standard	CE marking, RoHS		

### Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW	D-M9PW	D-M9BW
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm <sup>2</sup> ]	0.15		
	Strand diameter [mm]	0.05		
Min. bending radius [mm] (Reference values)		17		

- \* Refer to the **Web Catalog** for solid state auto switch common specifications.
- \* Refer to the **Web Catalog** for lead wire lengths.

### Weight

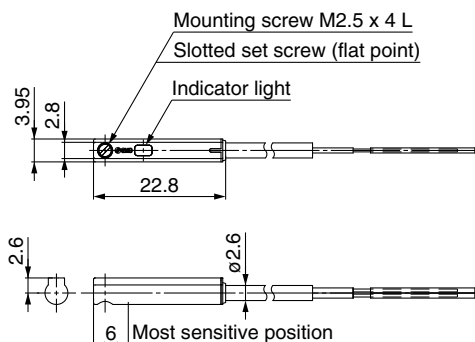
[g]

Auto switch model		D-M9NW	D-M9PW	D-M9BW
Lead wire length	0.5 m (Nil)	8	7	7
	1 m (M)	14	13	13
	3 m (L)	41	38	38
	5 m (Z)	68	63	63

### Dimensions

[mm]

D-M9□W





# LEKFS Series High Rigidity and High Precision Slider Type Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

## Design

### ⚠ Caution

- Do not apply a load in excess of the specification limits.**  
Select a suitable actuator by work load and allowable moment. If a load in excess of the specification limits is applied to the guide, adverse effects such as the generation of play in the guide, reduced accuracy, or reduced service life of the product may occur.
- Do not use the product in applications where excessive external force or impact force is applied to it.**  
This can cause a malfunction.

## Selection

### ⚠ Warning

- Do not increase the speed in excess of the specification limits.**  
Select a suitable actuator by the relationship between the allowable work load and speed, and the allowable speed of each stroke. If the product is used outside of the specification limits, adverse effects such as the generation of noise, reduced accuracy, or reduced service life of the product may occur.
- Do not use the product in applications where excessive external force or impact force is applied to it.**  
This can cause a malfunction.
- When the product repeatedly cycles with partial strokes (see the table below), operate it at a full stroke at least once every few dozen cycles.**  
Failure to do so may result in the product running out of lubrication.

Model	Partial stroke
LEKFS16	50 mm or less
LEKFS25	65 mm or less
LEKFS32	70 mm or less
LEKFS40	105 mm or less

- When external force is to be applied to the table, it is necessary to add the external force to the work load as the total carried load when selecting a size.**  
When a cable duct or flexible moving tube is attached to the actuator, the sliding resistance of the table will increase, which may lead to the malfunction of the product.

## Handling

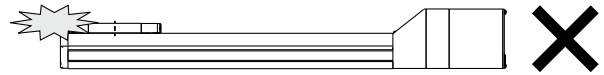
### ⚠ Caution

- Set the [In position] in the step data to at least 0.5.**  
If it is set any lower, the completion signal of the [In position] may not be properly output.
- INP output signal**
  - Positioning operation  
When the product comes within the set range of the step data [In position], the INP output signal will turn ON.  
Initial value: Set to [0.50] or higher.

## Handling

### ⚠ Caution

- Never allow the table to collide with the stroke end except during return to origin.**  
When incorrect instructions are inputted, such as those which cause the product to operate outside of the specification limits or outside of the actual stroke through changes in the controller/driver settings and/or origin position, the table may collide with the stroke end of the actuator. Be sure to check these points before use.  
If the table collides with the stroke end of the actuator, the guide, belt, or internal stopper may break. This can result in abnormal operation.



- Handle the actuator with care when it is used in the vertical direction as the workpiece will fall freely from its own weight.**
- The moving force should be the initial value.**  
If the moving force is set below the initial value, it may cause the generation of an alarm.
- The actual speed of this actuator is affected by the work load and stroke.**  
Check the model selection section of the catalog.
- Do not apply a load, impact, or resistance in addition to the transferred load during return to origin.**  
Additional force will cause the displacement of the origin position since it is based on the detected motor torque.
- Do not dent, scratch, or cause other damage to the body or table mounting surfaces.**  
Doing so may cause unevenness in the mounting surface, play in the guide, or an increase in the sliding resistance.
- Do not apply strong impact or an excessive moment while mounting a workpiece.**  
If an external force over the allowable moment is applied, it may cause play in the guide or an increase in the sliding resistance.
- Keep the flatness of the mounting surface within 0.1 mm/500 mm.**  
If a workpiece or base does not sit evenly on the body of the product, play in the guide or an increase in the sliding resistance may occur.
- When mounting the product, secure a bending diameter of 40 mm or longer for the cable.**
- Do not allow a workpiece to collide with the table during the positioning operation or within the positioning range.**
- For the model where grease is applied to the dust seal band for sliding, when wiping off the grease to remove foreign matter, etc., be sure to reapply grease afterward.**
- When bottom mounted, the dust seal band may become warped.**

Model Selection

Battery-less Absolute  
LEKFS

AC Servo Motor  
LEKFS

Auto Switch

JXC51/61

JXC

LECSA  
LECS-T

LECYM  
LECYU

Specific Product Precautions



# LEKFS Series High Rigidity and High Precision Slider Type Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

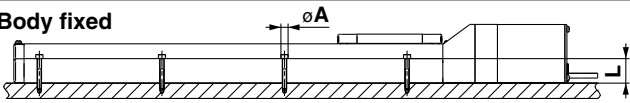
## Handling

### ⚠ Caution

#### 14. When mounting the product, use screws of adequate length and tighten them with adequate torque.

Tightening the screws with a higher torque than recommended may result in a malfunction and/or decrease in guide accuracy, while tightening with a lower torque can result in the displacement of the mounting position or, in extreme conditions, the actuator could become detached from its mounting position.

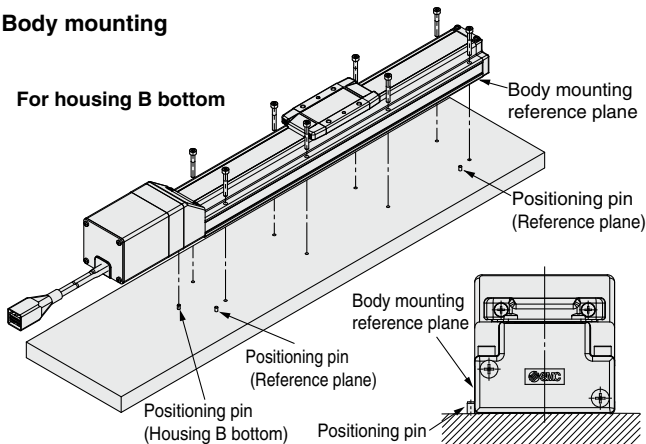
#### Body fixed



Model	Screw size	Max. tightening torque [N·m]	$\phi A$ [mm]	L [mm]
LEKFS16	M3	0.6	3.5	23.5
LEKFS25	M4	1.5	4.5	24
LEKFS32	M5	3.0	5.5	30
LEKFS40	M6	5.2	6.6	31

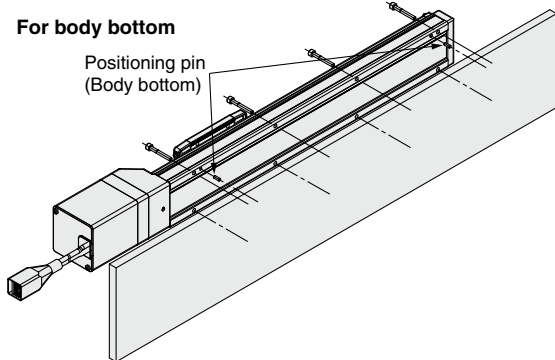
#### Body mounting

##### For housing B bottom

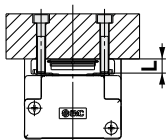


The traveling parallelism is the reference plane for the body mounting reference plane. If the traveling parallelism for a table is required, set the reference plane against parallel pins, etc.

##### For body bottom



#### Workpiece fixed



Model	Screw size	Max. tightening torque [N·m]	L (Max. screw-in depth) [mm]
LEKFS16	M4 x 0.7	1.5	6
LEKFS25	M5 x 0.8	3.0	8
LEKFS32	M6 x 1	5.2	9
LEKFS40	M8 x 1.25	12.5	13

To prevent the workpiece retaining screws from touching the body, use screws that are 0.5 mm or shorter than the maximum screw-in depth. If long screws are used, they may touch the body and cause a malfunction.

#### 15. Do not operate by fixing the table and moving the actuator body.

#### 16. Check the specifications for the minimum speed of each actuator.

Failure to do so may result in unexpected malfunctions such as knocking.

## Maintenance

### ⚠ Warning

#### Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check	Belt check
Inspection before daily operation	○	—	—
Inspection every 6 months/1000 km/5 million cycles*1	○	○	○

\*1 Select whichever comes first.

#### • Items for visual appearance check

1. Loose set screws, Abnormal amount of dirt, etc.
2. Check for visible damage, Check of cable joint
3. Vibration, Noise

#### • Items for internal check

1. Lubricant condition on moving parts
2. Loose or mechanical play in fixed parts or fixing screws

#### • Items for belt check

Stop operation immediately and replace the belt when any of the following occur. In addition, ensure your operating environment and conditions satisfy the requirements specified for the product.

##### a. Tooth shape canvas is worn out

Canvas fiber becomes fuzzy, Rubber is coming off and the fiber has become whitish, Lines of fibers have become unclear

##### b. Peeling off or wearing of the side of the belt

Belt corner has become rounded and frayed threads stick out

##### c. Belt is partially cut

Belt is partially cut, Foreign matter caught in the teeth of other parts is causing damage

##### d. A vertical line on belt teeth is visible

Damage which is made when the belt runs on the flange

##### e. Rubber back of the belt is softened and sticky

##### f. Cracks on the back of the belt are visible



# LEKFS Series

# Battery-less Absolute Encoder Type Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: <https://www.smcworld.com>

## Handling

### Caution

#### 1. Absolute encoder ID mismatch error at the first connection

In the following cases, an "ID mismatch error" alarm occurs after the power is turned ON. Perform a return to origin operation after resetting the alarm before use.

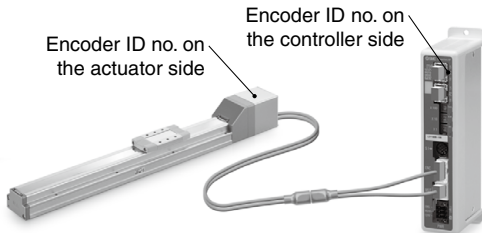
- When an electric actuator is connected and the power is turned ON for the first time after purchase\*1
- When the actuator or motor is replaced
- When the controller is replaced

\*1 If you have purchased an electric actuator and controller with the set part number, the pairing may have already been completed and the alarm may not be generated.

#### "ID mismatch error"

Operation is enabled by matching the encoder ID on the electric actuator side with the ID registered in the controller. This alarm occurs when the encoder ID is different from the registered contents of the controller. By resetting this alarm, the encoder ID is registered (paired) to the controller again.

When a controller is changed after pairing is completed				
	Encoder ID no. (* Numbers below are examples.)			
Actuator	17623	17623	17623	17623
Controller	17623	17699	17699	17623
ID mismatch error occurred?	No	Yes	Error reset ⇒ No	

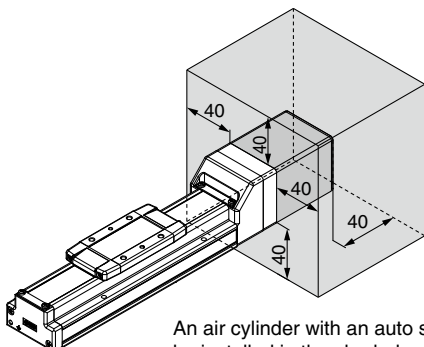


The ID number is automatically checked when the control power supply is turned ON. An error is output if the ID number does not match.

#### 2. In environments where strong magnetic fields are present, use may be limited.

A magnetic sensor is used in the encoder. Therefore, if the actuator motor is used in an environment where strong magnetic fields are present, malfunction or failure may occur. Do not expose the actuator motor to magnetic fields with a magnetic flux density of 1 mT or more.

When installing an electric actuator and an air cylinder with an auto switch (ex. CDQ2 series) or multiple electric actuators side by side, maintain a space of 40 mm or more around the motor. Refer to the construction drawing of the actuator motor.

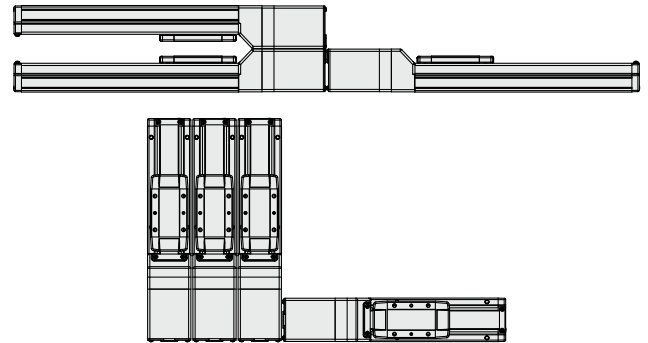


An air cylinder with an auto switch cannot be installed in the shaded area.

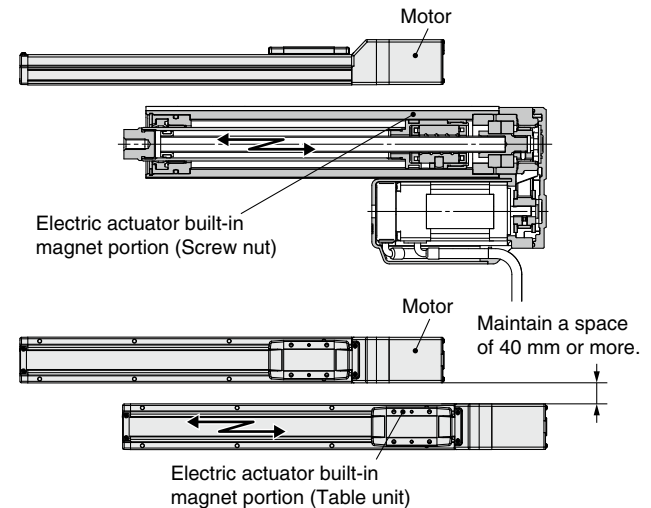
#### • When lining up actuators

SMC actuators can be used with their motors adjacent to each other. However, for actuators with a built-in auto switch magnet (LEY and LEF series), maintain a space of 40 mm or more between the motors and the position where the magnet passes. For the LEF series, the magnet is in the middle of the table, and for the LEY series, the magnet is in the piston portion. (Refer to the construction drawings in the catalog for details.)

○ Can be used with their motors adjacent to each other

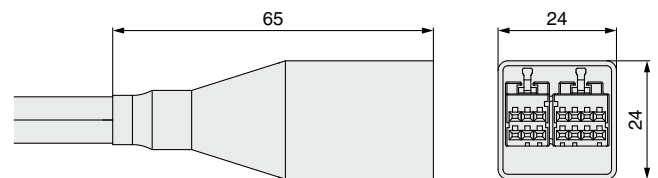


✗ Do not allow the motors to be in close proximity to the position where the magnet passes.



#### 3. The connector size of the motor cable is different from that of the electric actuator with an incremental encoder.

The motor cable connector of an electric actuator with a battery-less absolute encoder is different from that of an electric actuator with an incremental encoder. As the connector cover dimensions are different, take the dimensions below into consideration during the design process.



Battery-less absolute encoder connector cover dimensions

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC

LECSA  
LECS-T

LECYM  
LECYU

Specific Product Precautions



# Controllers

## JXC□ Series



### Step Data Input Type ..... p. 79

Battery-less Absolute (Step Motor 24 VDC)

JXC51/61 Series



### EtherCAT/EtherNet/IP™/PROFINET/DeviceNet®/IO-Link/CC-Link Direct Input Type ..... p. 86

Battery-less Absolute (Step Motor 24 VDC)

JXC□ Series



With STO sub-function

EtherNet/IP



PROFINET



DeviceNet



IO-Link



With STO sub-function

CC-Link



- Actuator Cable **p. 93**
- Precautions Relating to Differences in Controller Versions **p. 94**

Model Selection

Battery-less Absolute

LEKFS

AC Servo Motor

LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

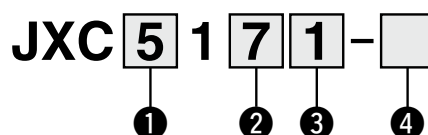
Specific Product Precautions

# Controller (Step Data Input Type)

## JXC51/61 Series



### How to Order



#### 1 Parallel I/O type

5	NPN
6	PNP

#### 2 Mounting

7	Screw mounting
8*1	DIN rail

\*1 The DIN rail is not included. It must be ordered separately.

#### 3 I/O cable length [m]

Nil	None
1	1.5
3	3
5	5

#### 4 Actuator part number

Without cable specifications and actuator options  
Example: Enter "LEKFS25EA-100" for the  
LEKFS25EA-100B-R1□□.

**BC** Blank controller\*1

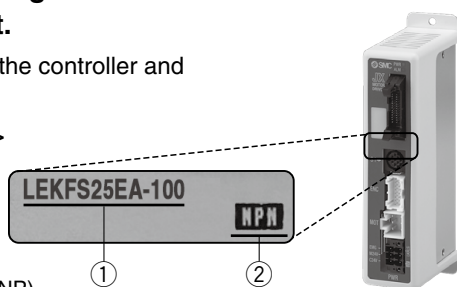
\*1 Requires dedicated software (JXC-BCW)

### The controller is sold as single unit after the compatible actuator is set.

Confirm that the combination of the controller and actuator is correct.

<Check the following before use.>

- ① Check the actuator label for the model number. This number should match that of the controller.
- ② Check that the Parallel I/O configuration matches (NPN or PNP).



\* Refer to the operation manual for using the products. Please download it via our website: <https://www.smcworld.com>

### Precautions for blank controllers (JXC□1□□-BC)

A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with. For data writing, use the controller setting software ACT Controller 2 or the dedicated software JXC-BCW.

- Both ACT Controller 2 and JXC-BCW can be downloaded from the SMC website.
- To use this software, order the communication cable for controller setting (JXC-W2A-C) and the USB cable (LEC-W2-U) separately.

#### Hardware Requirements

OS	Windows®10 (64 bit)	Windows®7
		Windows®8
Software	ACT Controller 2 (With JXC-BCW function)	JXC-BCW

\* Windows®7, Windows®8, and Windows®10 are registered trademarks of Microsoft Corporation in the United States.

**SMC website**  
<https://www.smcworld.com>

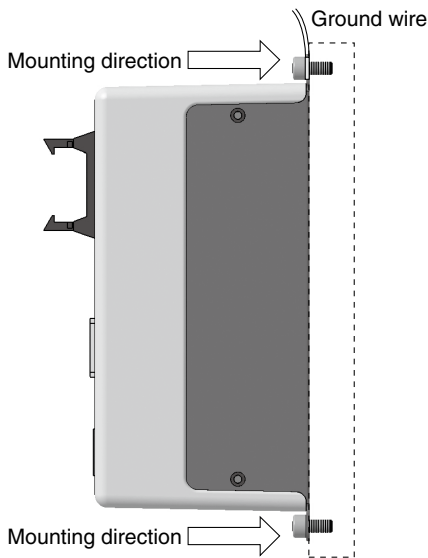
## Specifications

Model	JXC51 JXC61
Compatible motor	Step motor (Servo/24 VDC)
Power supply	Power voltage: 24 VDC ±10%
Current consumption (Controller)	100 mA or less
Compatible encoder	Battery-less absolute
Parallel input	11 inputs (Photo-coupler isolation)
Parallel output	13 outputs (Photo-coupler isolation)
Serial communication	RS485 (Only for the LEC-T1 and JXC-W2)
Memory	EEPROM
LED indicator	PWR, ALM
Cable length [m]	Actuator cable: 20 or less
Cooling system	Natural air cooling
Operating temperature range [°C]	0 to 55°C (No freezing)
Operating humidity range [%RH]	90 or less (No condensation)
Insulation resistance [MΩ]	Between all external terminals and the case: 50 (500 VDC)
Weight [g]	150 (Screw mounting), 170 (DIN rail mounting)

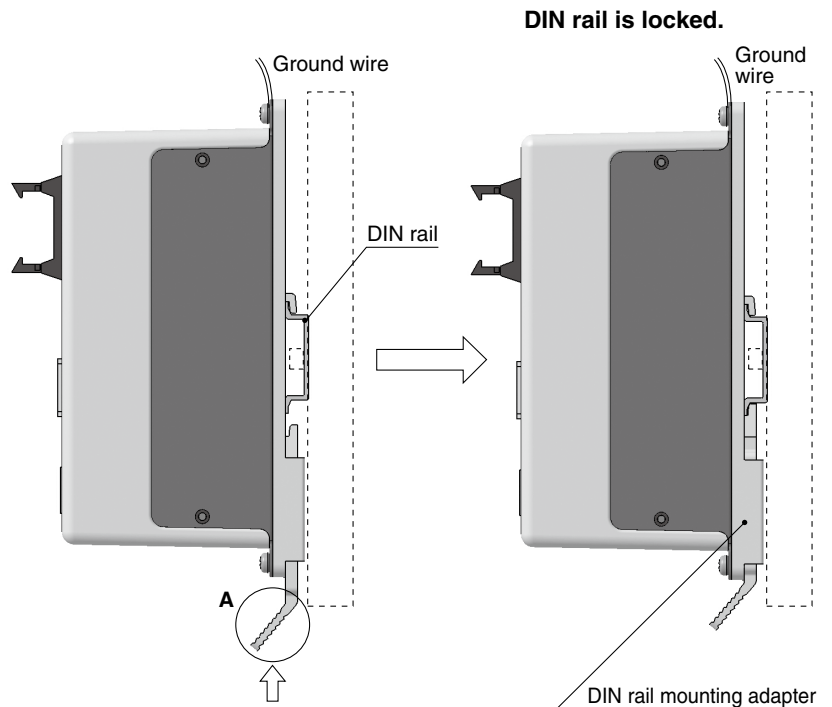


## How to Mount

### a) Screw mounting (JXC□17□-□) (Installation with two M4 screws)



### b) DIN rail mounting (JXC□18□-□) (Installation with the DIN rail)

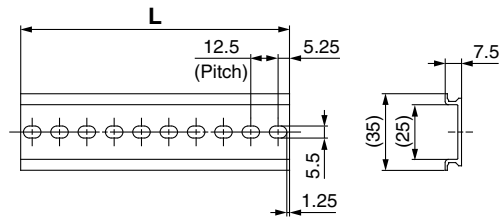


Hook the controller on the DIN rail and press the lever of section **A** in the arrow direction to lock it.

\* When size 25 or more of the LE series are used, the space between the controllers should be 10 mm or more.

### DIN rail AXT100-DR-□

\* For □, enter a number from the No. line in the table below.  
Refer to the dimension drawings on page 81 for the mounting dimensions.



### L Dimensions [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>L</b>	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
<b>L</b>	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

### DIN rail mounting adapter LEC-D0 (with 2 mounting screws)

This should be used when the DIN rail mounting adapter is mounted onto a screw mounting type controller afterward.

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC□

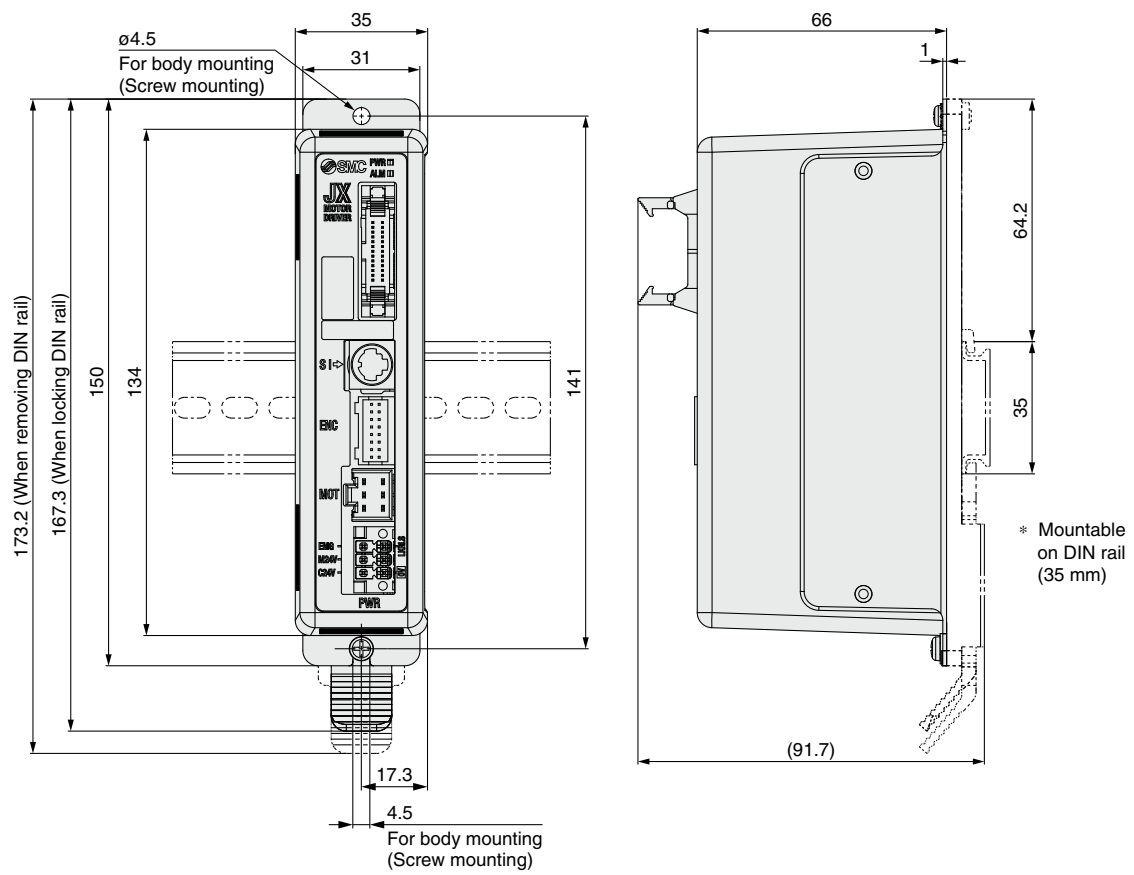
LECSA  
LECS□-T

LECYM  
LECYU

Specific Product  
Precautions

# JXC51/61 Series

## Dimensions



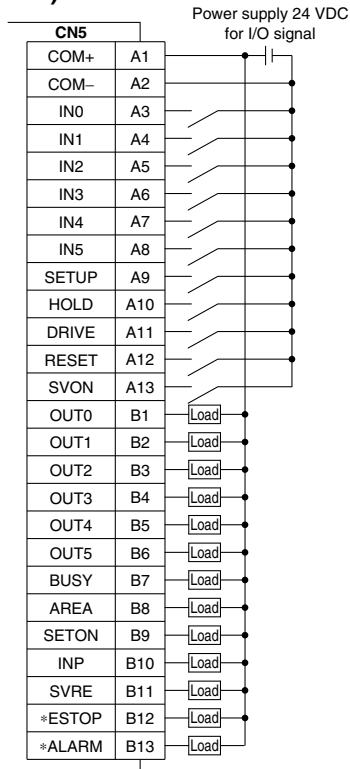
## Wiring Example

### Parallel I/O Connector

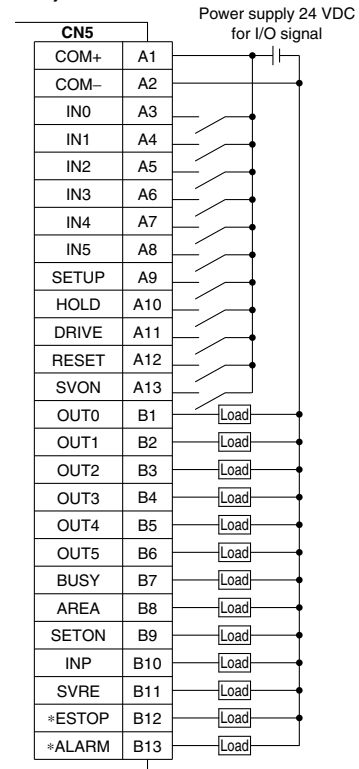
- \* When you connect a PLC to the parallel I/O connector, use the I/O cable (LEC-CN5-□).
- \* The wiring changes depending on the type of parallel I/O (NPN or PNP).

### Wiring diagram

#### JXC51□□-□ (NPN)



#### JXC61□□-□ (PNP)



### Input Signal

Name	Details
COM+	Connects the power supply 24 V for input/output signal
COM-	Connects the power supply 0 V for input/output signal
IN0 to IN5	Step data specified bit no. (Input is instructed by combining IN0 to 5.)
SETUP	Instruction to return to origin
HOLD	Temporarily stops operation
DRIVE	Instruction to drive
RESET	Resets alarm and interrupts operation
SVON	Servo ON instruction

### Output Signal

Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or pushing is completed.)
SVRE	Outputs when servo is on
*ESTOP* <sup>1</sup>	OFF when EMG stop is instructed
*ALARM* <sup>1</sup>	OFF when alarm is generated

\*1 Signal of negative-logic circuit (N.C.)

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product  
Precautions

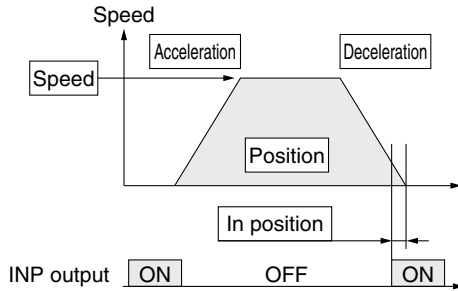
# JXC51/61 Series

## Step Data Setting

### 1. Step data setting for positioning

In this setting, the actuator moves toward and stops at the target position.

The following diagram shows the setting items and operation. The setting items and set values for this operation are stated below.



⊙ : Need to be set.  
○ : Need to be adjusted as required.  
— : Setting is not required.

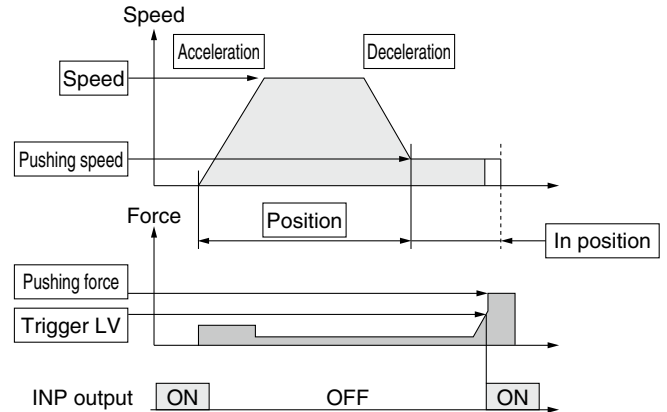
#### Step Data (Positioning)

Necessity	Item	Details
⊙	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
⊙	Speed	Transfer speed to the target position
⊙	Position	Target position
○	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
○	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
⊙	Pushing force	Set 0. (If values 1 to 100 are set, the operation will be changed to the pushing operation.)
—	Trigger LV	Setting is not required.
—	Pushing speed	Setting is not required.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
○	In position	Condition that turns on the INP output signal. When the actuator enters the range of [in position], the INP output signal turns on. (It is unnecessary to change this from the initial value.) When it is necessary to output the arrival signal before the operation is completed, make the value larger.

### 2. Step data setting for pushing

The actuator moves toward the pushing start position, and when it reaches that position, it starts pushing with the set force or less.

The following diagram shows the setting items and operation. The setting items and set values for this operation are stated below.



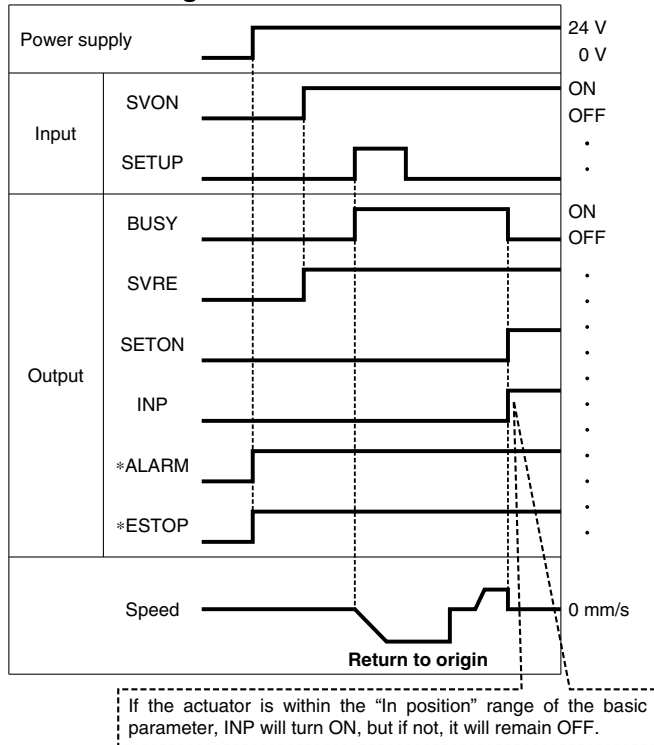
⊙ : Need to be set.  
○ : Need to be adjusted as required.

#### Step Data (Pushing)

Necessity	Item	Details
⊙	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
⊙	Speed	Transfer speed to the pushing start position
⊙	Position	Pushing start position
○	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
○	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
⊙	Pushing force	Pushing force ratio is defined. The setting range differs depending on the electric actuator type. Refer to the operation manual for the electric actuator.
⊙	Trigger LV	Condition that turns on the INP output signal. The INP output signal turns on when the generated force exceeds the value. Trigger level should be the pushing force or less.
○	Pushing speed	Pushing speed during pushing. When the speed is set fast, the electric actuator and workpieces might be damaged due to the impact when they hit the end, so this set value should be smaller. Refer to the operation manual for the electric actuator.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
⊙	In position	Transfer distance during pushing. If the transferred distance exceeds the setting, it stops even if it is not pushing. If the transfer distance is exceeded, the INP output signal will not turn on.

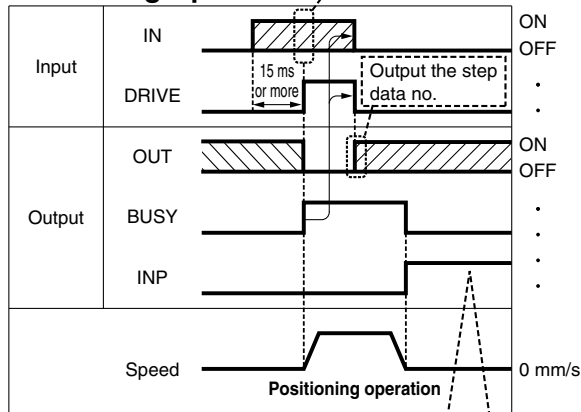
## Signal Timing

### Return to Origin



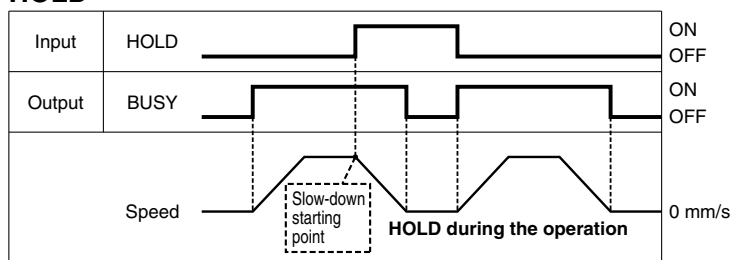
\* \*ALARM and \*ESTOP are expressed as negative-logic circuits.

### Positioning Operation



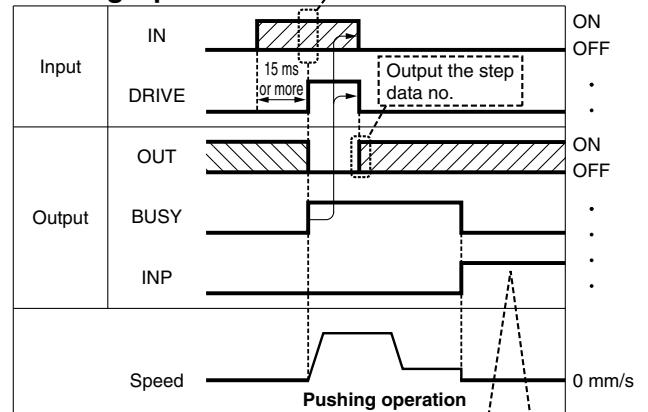
\* "OUT" is output when "DRIVE" is changed from ON to OFF. Refer to the operation manual for details on the controller for the LEM series. (When power supply is applied, "DRIVE" or "RESET" is turned ON or \*ESTOP is turned OFF, all of the "OUT" outputs are OFF.)

### HOLD

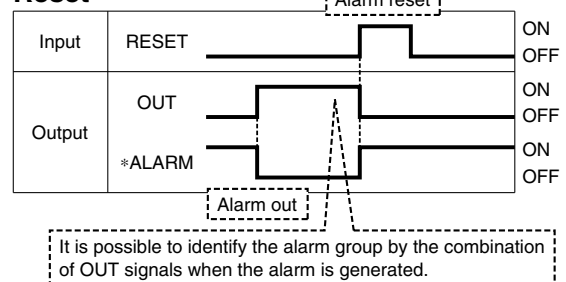


\* When the actuator is within the "In position" range in the pushing operation, it does not stop even if HOLD signal is input.

### Pushing Operation



### Reset



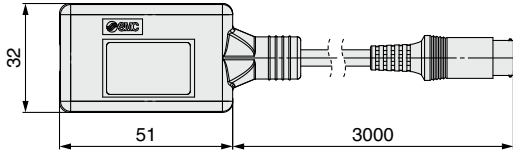
\* \*ALARM is expressed as a negative-logic circuit.

# JXC51/61 Series

## Options

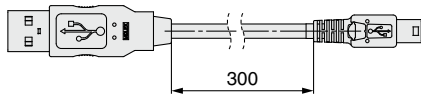
### ■ Communication cable for controller setting

#### ① Communication cable JXC-W2A-C



\* It can be connected to the controller directly.

#### ② USB cable LEC-W2-U



#### ③ Controller setting kit JXC-W2A

A set which includes a communication cable (JXC-W2A-C) and a USB cable (LEC-W2-U)

#### <Controller setting software/USB driver>

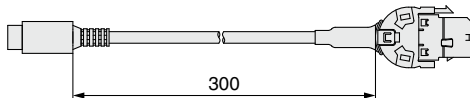
- Controller setting software
  - USB driver (For JXC-W2A-C)
- Download from SMC's website: <https://www.smcworld.com>

#### Hardware Requirements

OS	Windows®7, Windows®8.1, Windows®10
Communication interface	USB 1.1 or USB 2.0 ports
Display	1024 x 768 or more

\* Windows®7, Windows®8.1, and Windows®10 are registered trademarks of Microsoft Corporation in the United States.

### ■ Conversion cable P5062-5 (Cable length: 300 mm)



\* To connect the teaching box (LEC-T1-3□□□) or communication cable for controller setting (LEC-W2A-C) to the controller, a conversion cable is required.

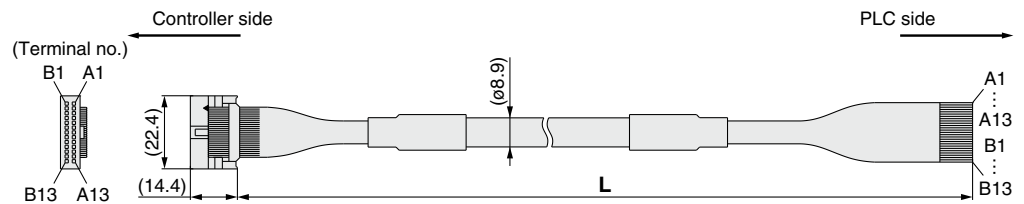
### ■ I/O Cable

#### LEC-CN5-1

#### Cable length (L) [m]

1	1.5
3	3
5	5

\* Conductor size: AWG28



Connector pin no.	Insulation color	Dot mark	Dot color
A1	Light brown	■	Black
A2	Light brown	■	Red
A3	Yellow	■	Black
A4	Yellow	■	Red
A5	Light green	■	Black
A6	Light green	■	Red
A7	Gray	■	Black
A8	Gray	■	Red
A9	White	■	Black
A10	White	■	Red
A11	Light brown	■ ■	Black
A12	Light brown	■ ■	Red
A13	Yellow	■ ■	Black

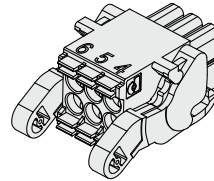
Connector pin no.	Insulation color	Dot mark	Dot color
B1	Yellow	■ ■	Red
B2	Light green	■ ■	Black
B3	Light green	■ ■	Red
B4	Gray	■ ■	Black
B5	Gray	■ ■	Red
B6	White	■ ■	Black
B7	White	■ ■	Red
B8	Light brown	■ ■ ■	Black
B9	Light brown	■ ■ ■	Red
B10	Yellow	■ ■ ■	Black
B11	Yellow	■ ■ ■	Red
B12	Light green	■ ■ ■	Black
B13	Light green	■ ■ ■	Red
—			Shield

#### Weight

Product no.	Weight [g]
LEC-CN5-1	170
LEC-CN5-3	320
LEC-CN5-5	520

### ■ Power supply plug JXC-CPW

\* The power supply plug is an accessory.



<Applicable cable size>  
AWG20 (0.5 mm<sup>2</sup>), cover diameter 2.0 mm or less

⑥	⑤	④	①	④	0V
③	②	①		⑤	N.C.
				③	EMG
				⑥	LK RLS

#### Power supply plug

Terminal name	Function	Details
0V	Common supply (-)	The M24V terminal, C24V terminal, EMG terminal, and LK RLS terminal are common (-).
M24V	Motor power supply (+)	Motor power supply (+) of the controller
C24V	Control power supply (+)	Control power supply (+) of the controller
EMG	Stop (+)	Connection terminal of the external stop circuit
LK RLS	Lock release (+)	Connection terminal of the lock release switch

### ■ Teaching box

#### LEC-T1-3□□□

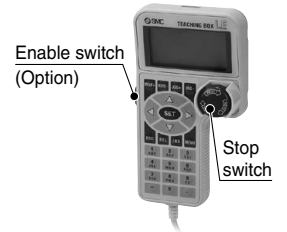
Teaching box

Cable length [m]  
3 3

Initial language

J	Japanese
E	English

\* The displayed language can be changed to English or Japanese.



Enable switch (Option)

Nil	None
S	Equipped with enable switch

\* Interlock switch for jog and test function

Stop switch

G	Equipped with stop switch
---	---------------------------

#### Specifications

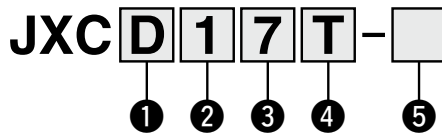
Item	Description
Switch	Stop switch, Enable switch (Option)
Cable length [m]	3
Enclosure	IP64 (Except connector)
Operating temperature range [°C]	5 to 50
Operating humidity range [%RH]	90 or less (No condensation)
Weight [g]	350 (Except cable)

# Step Motor Controller

## JXCE□/91/P1/D1/L□/M1 Series



### How to Order



#### 1 Communication protocol

		Standard	With STO sub-function
<b>E</b>	EtherCAT	●	●
<b>9</b>	EtherNet/IP™	●	—
<b>P</b>	PROFINET	●	—
<b>D</b>	DeviceNet®	●	—
<b>L</b>	IO-Link	●	●
<b>M</b>	CC-Link	●	—

#### 2 Number of axes, Special specification

<b>1</b>	1 axis, Standard
<b>F</b>	1 axis, With STO sub-function

#### 3 Mounting

<b>7</b>	Screw mounting
<b>8</b> *1	DIN rail

\*1 The DIN rail is not included. It must be ordered separately. (Refer to page 90.)

#### 4 Option

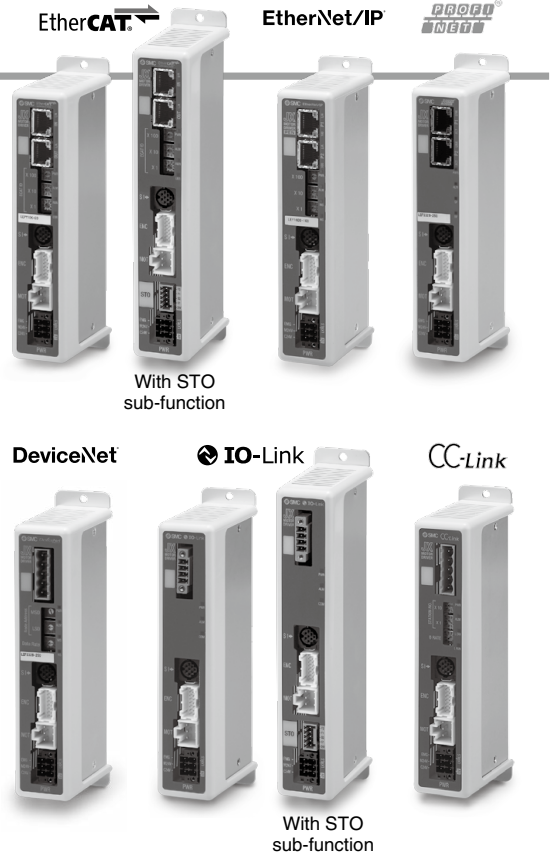
<b>Nil</b>	Without option
<b>S</b>	With straight type communication plug
<b>T</b>	With T-branch type communication plug

\* Select "Nil" for anything other than JXCD1 and JXCM1.

#### 5 Actuator part number

Without cable specifications and actuator options Example: Enter " <b>LEKFS25EB-100</b> " for the LEKFS25EB-100B-R1□□.	
<b>BC</b>	Blank controller*1

\*1 Requires dedicated software (JXC-BCW)



Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

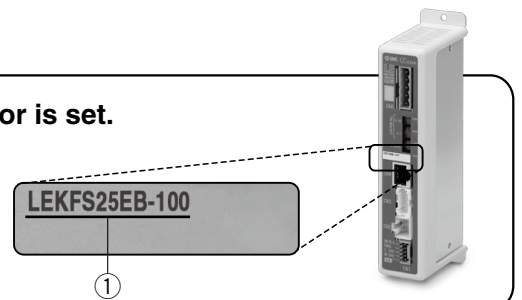
LECYM  
LECYU

Specific Product  
Precautions

### The controller is sold as single unit after the compatible actuator is set.

Confirm that the combination of the controller and actuator is correct.

- ① Check the actuator label for the model number. This number should match that of the controller.



\* Refer to the operation manual for using the products. Please download it via our website: <https://www.smcworld.com>

### Precautions for blank controllers (JXC□□□□-BC)

A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with. For data writing, use the controller setting software ACT Controller 2 or the dedicated software JXC-BCW.

- Both ACT Controller 2 and JXC-BCW can be downloaded from the SMC website.
- To use this software, order the communication cable for controller setting (JXC-W2A-C) and the USB cable (LEC-W2-U) separately.

#### Hardware Requirements

OS	Windows®10 (64 bit)	Windows®7	Windows®8	Windows®10
Software	ACT Controller 2 (With JXC-BCW function)	JXC-BCW		

\* Windows®7, Windows®8, and Windows®10 are registered trademarks of Microsoft Corporation in the United States.

SMC website: <https://www.smcworld.com>

# JXCE□/91/P1/D1/L□/M1 Series

## Specifications

Model		JXCE1	JXCEF	JXC91	JXCP1	JXCD1	JXCL1	JXCLF	JXCM1
<b>Network</b>		EtherCAT		EtherNet/IP™	PROFINET	DeviceNet®	IO-Link		CC-Link
<b>Compatible motor</b>		Step motor (Servo/24 VDC)							
<b>Power supply</b>		Power voltage: 24 VDC ±10%							
<b>Current consumption (Controller)</b>		200 mA or less	130 mA or less	200 mA or less	100 mA or less	100 mA or less	100 mA or less	100 mA or less	100 mA or less
<b>Compatible encoder</b>		Battery-less absolute							
<b>Communication specifications</b>	<b>Applicable system</b>	EtherCAT*2		EtherNet/IP™*2	PROFINET*2	DeviceNet®	IO-Link		CC-Link
	<b>Protocol</b>	EtherCAT*2		EtherNet/IP™*2	PROFINET*2	DeviceNet®	IO-Link		CC-Link
	<b>Version*1</b>	Conformance Test Record V.1.2.6		Volume 1 (Edition 3.14) Volume 2 (Edition 1.15)	Specification Version 2.32	Volume 1 (Edition 3.14) Volume 3 (Edition 1.13)	Version 1.1 Port Class A		Ver. 1.10
	<b>Communication speed</b>	100 Mbps*2		10/100 Mbps*2 (Automatic negotiation)	100 Mbps*2	125/250/500 kbps	230.4 kbps (COM3)		156 kbps, 625 kbps, 2.5 Mbps, 5 Mbps, 10 Mbps
	<b>Configuration file*3</b>	ESI file		EDS file	GSDML file	EDS file	IODD file		CSP+ file
	<b>I/O occupation area</b>	Input 20 bytes Output 36 bytes		Input 36 bytes Output 36 bytes	Input 36 bytes Output 36 bytes	Input 4, 10, 20 bytes Output 4, 12, 20, 36 bytes	Input 14 bytes Output 22 bytes		1 station, 2 stations, 4 stations
<b>Terminating resistor</b>		Not included							
<b>Memory</b>		EEPROM							
<b>LED indicator</b>		PWR, RUN, ALM, ERR	PWR, ALM, MS, NS	PWR, ALM, SF, BF	PWR, ALM, MS, NS	PWR, ALM, COM		PWR, ALM, L ERR, L RUN	
<b>Cable length [m]</b>		Actuator cable: 20 or less							
<b>Cooling system</b>		Natural air cooling							
<b>Operating temperature range [°C]</b>		0 to 55 (No freezing)*4							
<b>Operating humidity range [%RH]</b>		90 or less (No condensation)							
<b>Insulation resistance [MΩ]</b>		Between all external terminals and the case: 50 (500 VDC)							
<b>Safety function</b>		—	STO, SS1-t	—			STO, SS1-t	—	
<b>Safety standards</b>		—	EN61508 SIL3*5 EN62061 SIL CL3*5 EN ISO13849-1 Cat.3 PL e*5	—			EN61508 SIL3*5 EN62061 SIL CL3*5 EN ISO13849-1 Cat.3 PL e*5	—	
<b>Weight [g]</b>	<b>Screw mounting</b>	220	250	210	220	210	190	220	170
	<b>DIN rail mounting</b>	240	270	230	240	230	210	240	190

\*1 Please note that versions are subject to change.

\*2 Use a shielded communication cable with CAT5 or higher for the PROFINET, EtherNet/IP™, and EtherCAT.

\*3 The files can be downloaded from the SMC website.

\*4 The operating temperature range for both controller version 1 products and controller version 2 products is 0 to 40°C. Refer to the **Web Catalog** for details on identifying controller version symbols.

\*5 The above safety integrity level is the max. value. The achievable level varies depending on the configuration and inspection method of the component. Be sure to refer to "Safety Manual: JXC#-OMY0009" for more information.

### ■ Trademark

EtherNet/IP® is a registered trademark of ODVA, Inc.

DeviceNet® is a registered trademark of ODVA, Inc.

EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

## Example of Operation Command

In addition to the step data input of 64 points maximum in each communication protocol, the changing of each parameter can be performed in real time via numerical data defined operation.

\* Numerical values other than "Moving force," "Area 1," and "Area 2" can be used to perform operation under numerical instructions from JXCL1.

### <Application example> Movement between 2 points

No.	Movement mode	Speed	Position	Acceleration	Deceleration	Pushing force	Trigger LV	Pushing speed	Moving force	Area 1	Area 2	In position
0	1: Absolute	100	10	3000	3000	0	0	0	100	0	0	0.50
1	1: Absolute	100	100	3000	3000	0	0	0	100	0	0	0.50

#### <Step no. defined operation>

Sequence 1: Servo ON instruction

Sequence 2: Instruction to return to origin

Sequence 3: Specify step data No. 0 to input the DRIVE signal.

Sequence 4: Specify step data No. 1 after the DRIVE signal has been temporarily turned OFF to input the DRIVE signal.

#### <Numerical data defined operation>

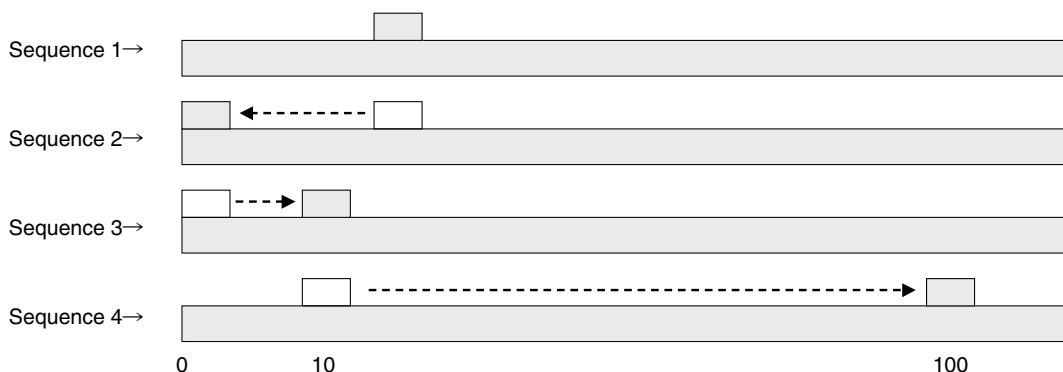
Sequence 1: Servo ON instruction

Sequence 2: Instruction to return to origin

Sequence 3: Specify step data No. 0 and turn ON the input instruction flag (position). Input 10 in the target position. Subsequently the start flag turns ON.

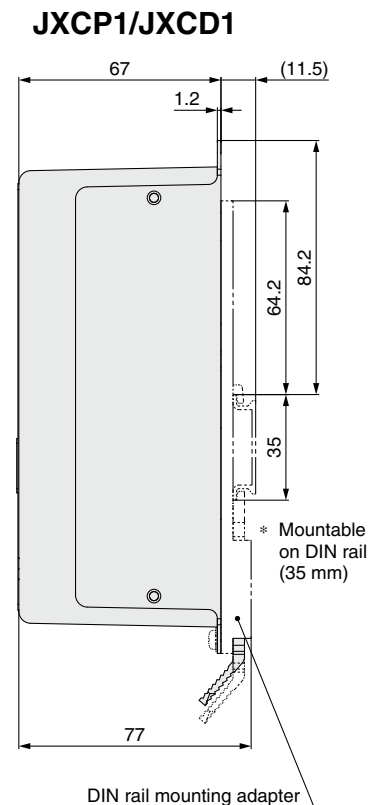
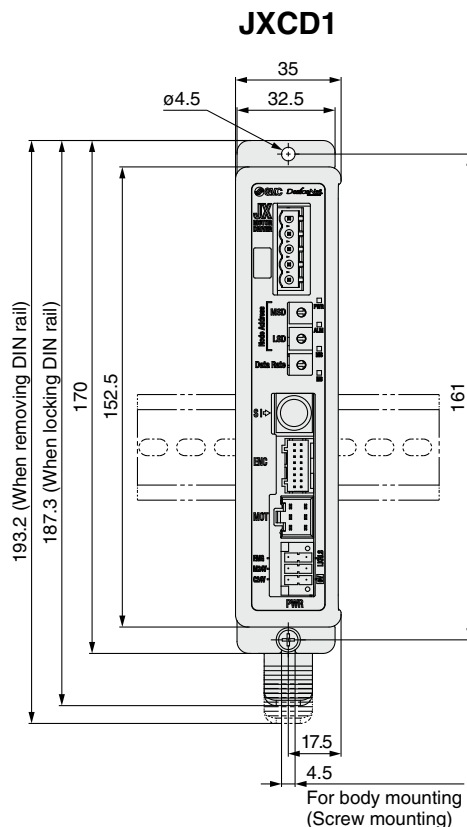
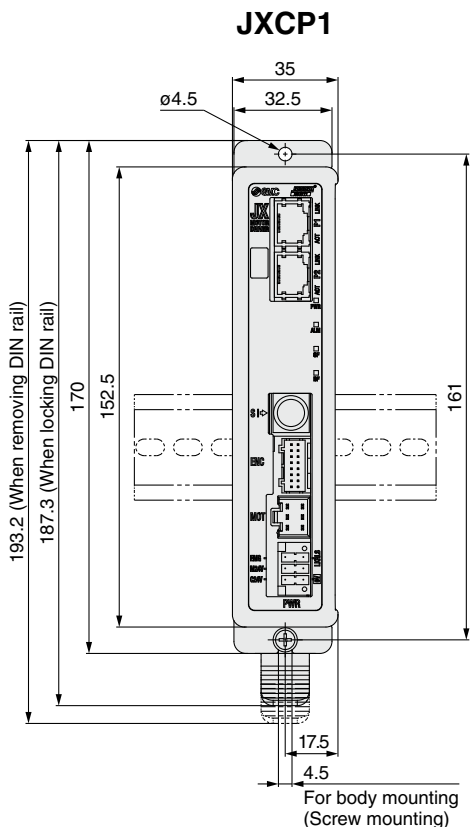
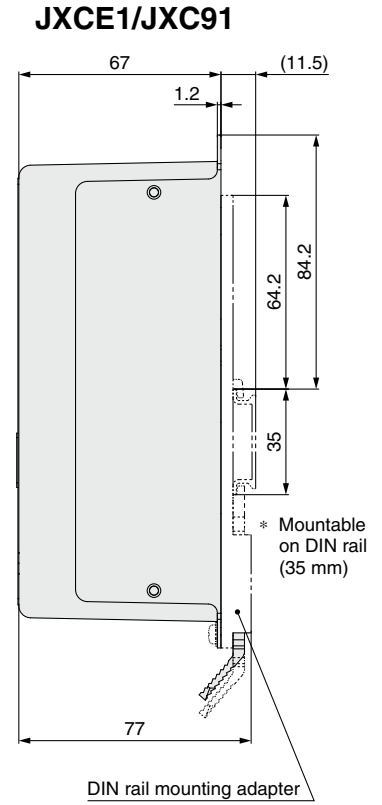
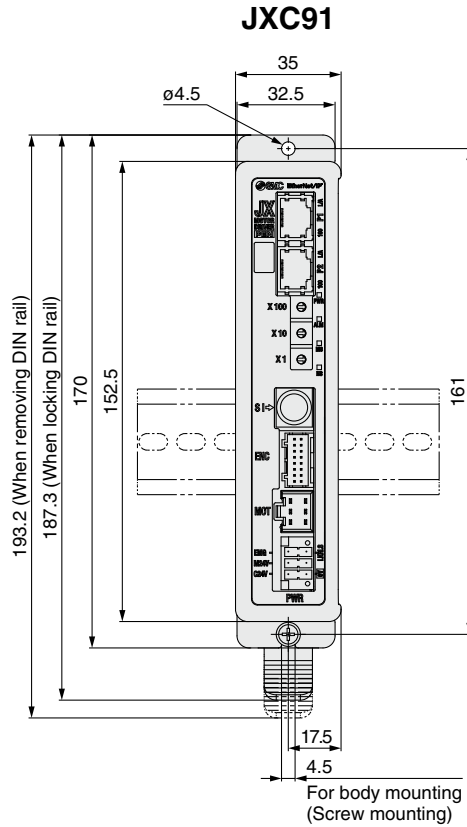
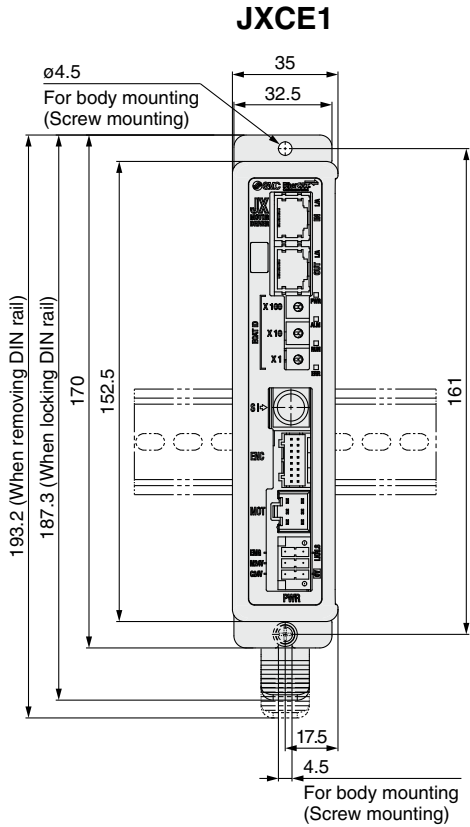
Sequence 4: Turn ON step data No. 0 and the input instruction flag (position) to change the target position to 100 while the start flag is ON.

The same operation can be performed with any operation command.





**Dimensions**

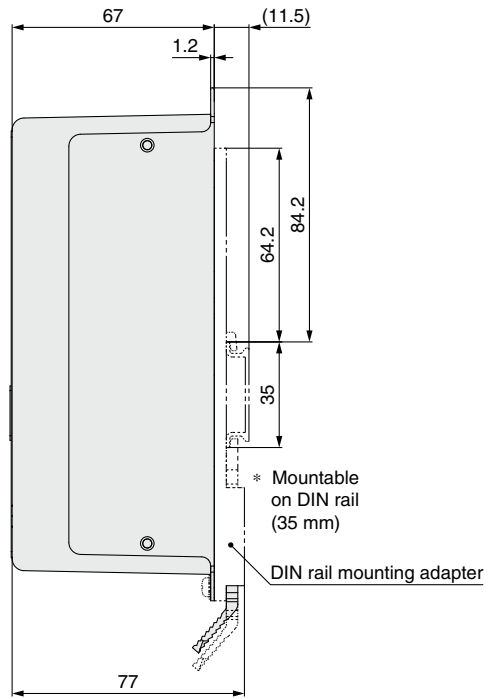
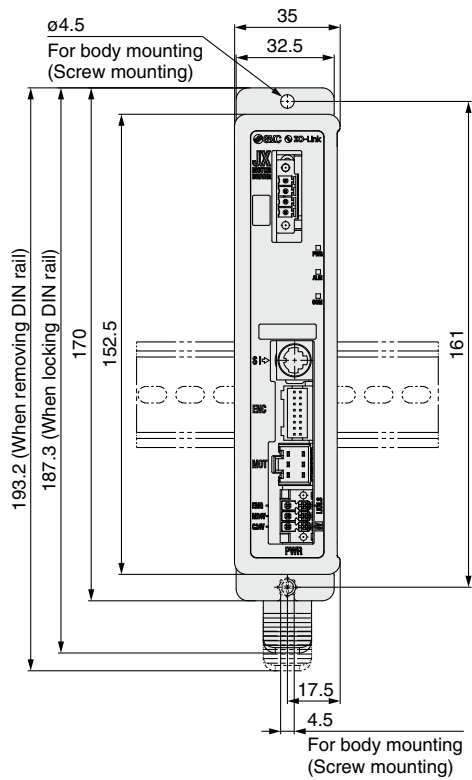


Model Selection	Battery-less Absolute	AC Servo Motor	Auto Switch	JXC51/61	JXC□	LECSA LECS□-T	LECYM LECYU	Specific Product Precautions
	<b>LEKFS</b>	<b>LEKFS</b>						

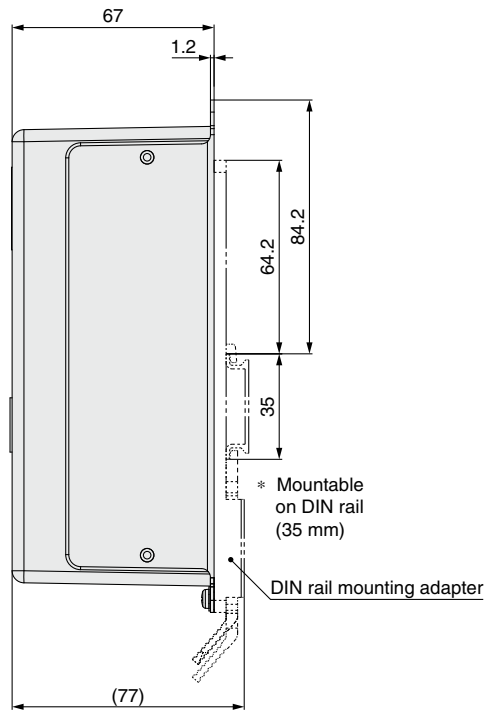
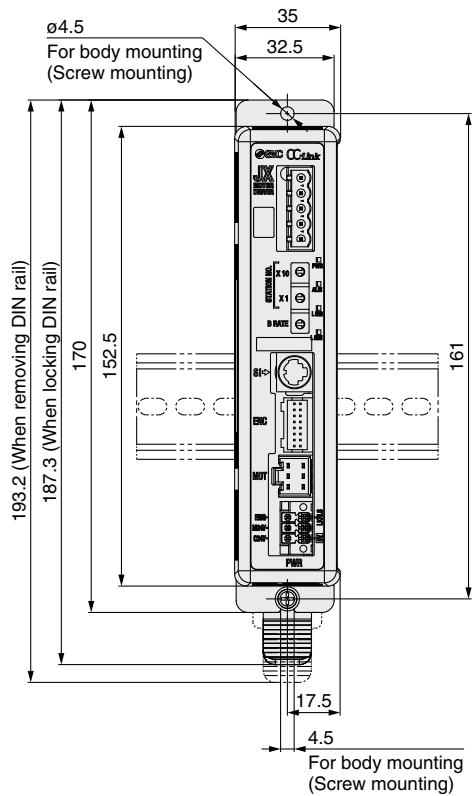
# JXCE□/91/P1/D1/L□/M1 Series

## Dimensions

### JXCL1

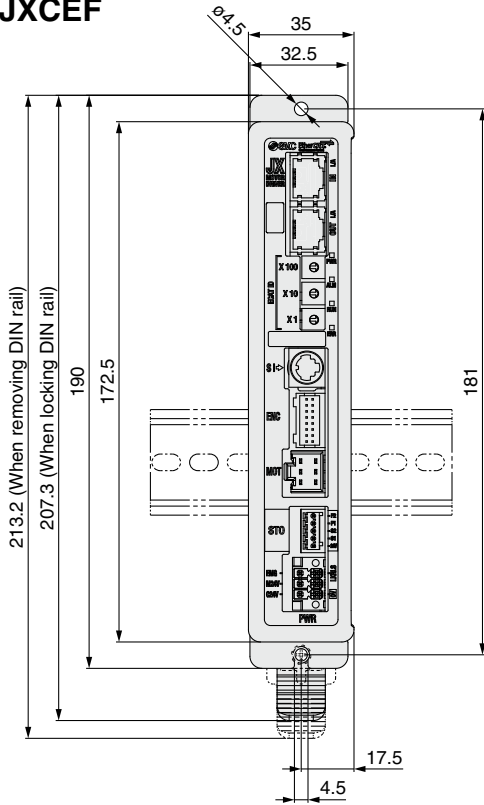


### JXCM1

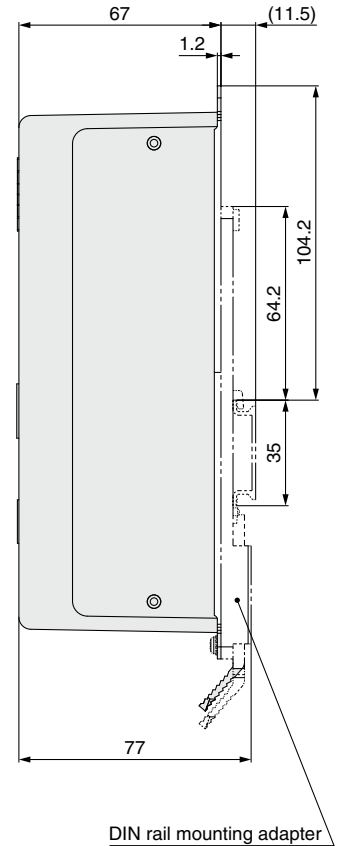
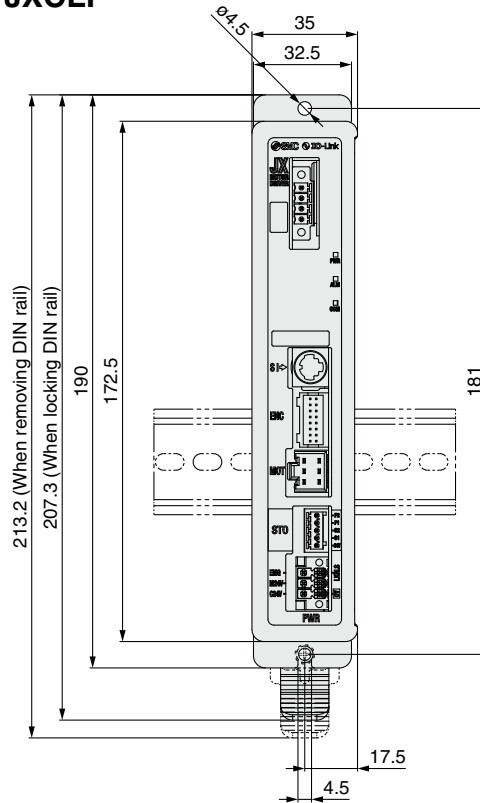


## Dimensions

### JXCEF



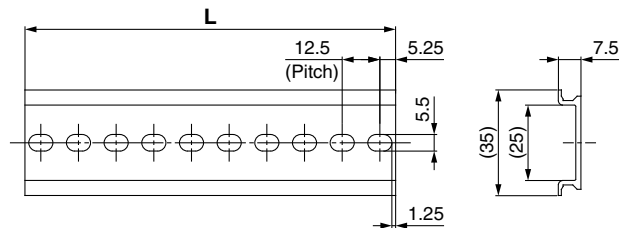
### JXCLF



DIN rail mounting adapter

### DIN rail AXT100-DR-□

\* For □, enter a number from the No. line in the table below. Refer to the dimension drawings on pages 88 to 90 for the mounting dimensions.



### L Dimensions [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

### DIN rail mounting adapter LEC-3-D0 (with 2 mounting screws)

This should be used when the DIN rail mounting adapter is mounted onto a screw mounting type controller afterward.

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

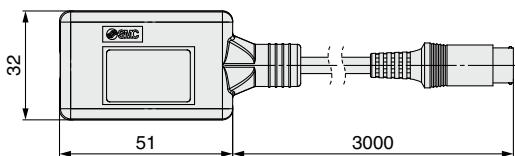
Specific Product  
Precautions

# JXCE□/91/P1/D1/L□/M1 Series

## Options

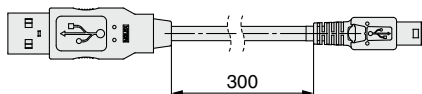
### ■ Communication cable for controller setting

#### ① Communication cable JXC-W2A-C



\* It can be connected to the controller directly.

#### ② USB cable LEC-W2-U



#### ③ Controller setting kit JXC-W2A

A set which includes a communication cable (JXC-W2A-C) and a USB cable (LEC-W2-U)

#### <Controller setting software/USB driver>

- Controller setting software
- USB driver (For JXC-W2A-C)

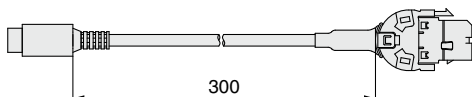
Download from SMC's website: <https://www.smcworld.com>

#### Hardware Requirements

OS	Windows®7, Windows®8.1, Windows®10
Communication interface	USB 1.1 or USB 2.0 ports
Display	1024 x 768 or more

\* Windows®7, Windows®8.1, and Windows®10 are registered trademarks of Microsoft Corporation in the United States.

### ■ Conversion cable P5062-5 (Cable length: 300 mm)



\* To connect the teaching box (LEC-T1-3□G□) or communication cable for controller setting (LEC-W2A-C) to the controller, a conversion cable is required.

### ■ DIN rail mounting adapter LEC-3-D0

\* With 2 mounting screws

This should be used when the DIN rail mounting adapter is mounted onto a screw mounting type controller afterward.

### ■ DIN rail AXT100-DR-□

\* For □, enter a number from the No. line in the table on page 90. Refer to the dimension drawings on pages 88 to 90 for the mounting dimensions.

### ■ Teaching box

LEC-T1-3□G□

Teaching box

Cable length [m]  
3 3

Initial language

J	Japanese
E	English

\* The displayed language can be changed to English or Japanese.

Enable switch (Option)

Enable switch

Nil	None
S	Equipped with enable switch

\* Interlock switch for jog and test function

Stop switch

G Equipped with stop switch



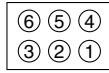
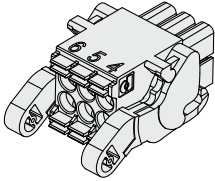
#### Specifications

Item	Description
Switch	Stop switch, Enable switch (Option)
Cable length [m]	3
Enclosure	IP64 (Except connector)
Operating temperature range [°C]	5 to 50
Operating humidity range [%RH]	90 or less (No condensation)
Weight [g]	350 (Except cable)

## Options

### ■ Power supply plug JXC-CPW

\* The power supply plug is an accessory.

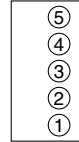
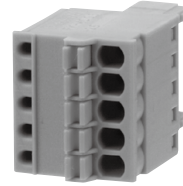


- ① C24V
- ② M24V
- ③ EMG
- ④ 0V
- ⑤ N.C.
- ⑥ LK RLS

#### Power supply plug

Terminal name	Function	Details
0V	Common supply (-)	The M24V terminal, C24V terminal, EMG terminal, and LK RLS terminal are common (-).
M24V	Motor power supply (+)	Motor power supply (+) of the controller
C24V	Control power supply (+)	Control power supply (+) of the controller
EMG	Stop (+)	Connection terminal of the external stop circuit
LK RLS	Lock release (+)	Connection terminal of the lock release switch

### ■ STO signal plug JXC-CSTO



#### STO signal plug

Pin no.	Signal name	Details
1	24V	+24 V output (Max. 100 mA)
2	STO1	STO input 1
3	STO2	STO input 2
4	Feedback 1	STO1 feedback signal
5	Feedback 2	STO2 feedback signal

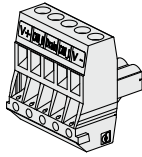
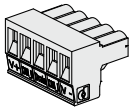
### ■ Communication plug connector

For DeviceNet®

**Straight type**  
JXC-CD-S

**T-branch type**  
JXC-CD-T

**Communication plug connector for DeviceNet®**



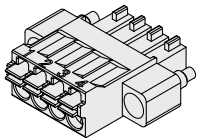
Terminal name	Details
V+	Power supply (+) for DeviceNet®
CAN_H	Communication wire (High)
Drain	Grounding wire/Shielded wire
CAN_L	Communication wire (Low)
V-	Power supply (-) for DeviceNet®

For IO-Link

**Straight type**  
JXC-CL-S

**Communication plug connector for IO-Link**

\* The communication plug connector for IO-Link is an accessory.



Terminal no.	Terminal name	Details
1	L+	+24 V
2	NC	N/A
3	L-	0 V
4	C/Q	IO-Link signal

For CC-Link

**Straight type**  
LEC-CMJ-S

**T-branch type**  
LEC-CMJ-T

**Communication plug connector for CC-Link**



Terminal name	Details
DA	CC-Link communication line A
DB	CC-Link communication line B
DG	CC-Link ground line
SLD	CC-Link shield
FG	Frame ground

Model Selection

Battery-less Absolute

LEKFS

AC Servo Motor

LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product Precautions

# JXC51/61 Series JXCE□/91/P1/D1/L□/M1 Series Actuator Cable (Option)

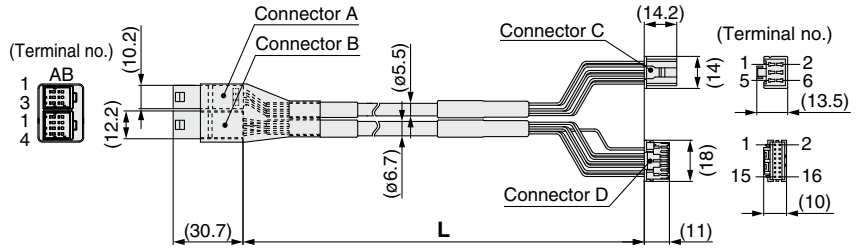
[Robotic cable for battery-less absolute (Step motor 24 VDC)]

## LE-CE-1

Cable length (L) [m]

1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

\*1 Produced upon receipt of order



### Weight

Product no.	Weight [g]	Note
LE-CE-1	190	Robotic cable
LE-CE-3	360	
LE-CE-5	570	
LE-CE-8	900	
LE-CE-A	1120	
LE-CE-B	1680	
LE-CE-C	2210	

Signal	Connector A terminal no.	Cable color	Connector C terminal no.
A	B-1	Brown	2
$\bar{A}$	A-1	Red	1
B	B-2	Orange	6
$\bar{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/-	A-3	Blue	4

Signal	Connector B terminal no.	Cable color	Connector D terminal no.
Vcc	B-1	Brown	12
GND	A-1	Black	13
$\bar{A}$	B-2	Red	7
A	A-2	Black	6
$\bar{B}$	B-3	Orange	9
B	A-3	Black	8
SD+ (RX)	B-4	Yellow	11
SD- (TX)	A-4	Black	10
		Black	3

[Robotic cable with lock for battery-less absolute (Step motor 24 VDC)]

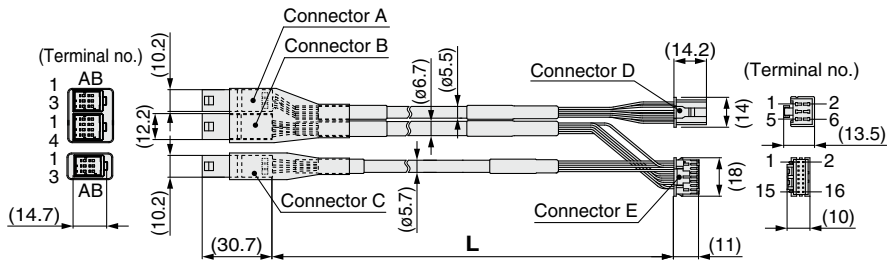
## LE-CE-1-B

Cable length (L) [m]

1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

\*1 Produced upon receipt of order

With lock and sensor



### Weight

Product no.	Weight [g]	Note
LE-CE-1-B	240	Robotic cable
LE-CE-3-B	460	
LE-CE-5-B	740	
LE-CE-8-B	1170	
LE-CE-A-B	1460	
LE-CE-B-B	2120	
LE-CE-C-B	2890	

Signal	Connector A terminal no.	Cable color	Connector C terminal no.
A	B-1	Brown	2
$\bar{A}$	A-1	Red	1
B	B-2	Orange	6
$\bar{B}$	A-2	Yellow	5
COM-A/COM	B-3	Green	3
COM-B/-	A-3	Blue	4

Signal	Connector B terminal no.	Cable color	Connector E terminal no.
Vcc	B-1	Brown	12
GND	A-1	Black	13
$\bar{A}$	B-2	Red	7
A	A-2	Black	6
$\bar{B}$	B-3	Orange	9
B	A-3	Black	8
SD+ (RX)	B-4	Yellow	11
SD- (TX)	A-4	Black	10
		Black	3

Signal	Connector C terminal no.	Cable color	Terminal no.
Lock (+)	B-1	Red	4
Lock (-)	A-1	Black	5
Sensor (+)	B-3	Brown	1
Sensor (-)	A-3	Blue	2

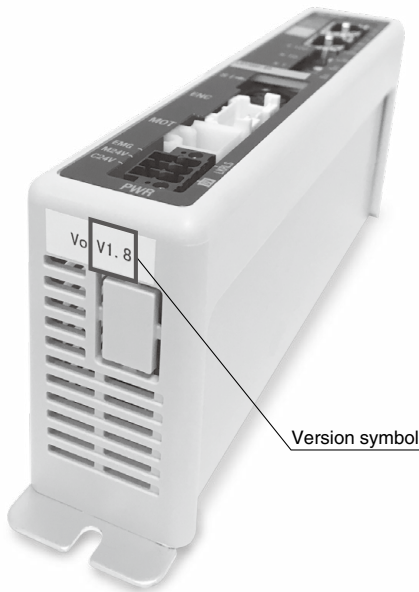


# JXC51/61/E□/91/P1/D1/L□/M1 Series Precautions Relating to Differences in Controller Versions

As the controller version of the JXC series differs, the internal parameters are not compatible.

- If using the JXC□□-BC, please use the latest version of the JXC-BCW (parameter writing tool).
- There are currently 3 versions available: version 1 products (V1.□ or S1.□), version 2 products (V2.□ or S2.□), and version 3 products (V3.□ or S3.□). Keep in mind that in order to write a backup file (.bcp) to another controller with the JXC-BCW, it needs to be the same version as the controller that created the file. (For example, a backup file created by a version 1 product can only be written to another version 1 product, and so on.)

## Identifying Version Symbols



### JXC□□ Series Version V3.□ or S3.□ Products

XR V3.0

---

**Applicable models**  
JXC91□ Series

XR S3.0 T1.0

---

**Applicable models**  
JXC51□ Series  
JXC61□ Series  
JXCE□□ Series  
JXCP1□ Series  
JXCD1□ Series  
JXCL□□ Series  
JXCM1□ Series

### JXC□□ Series Version V2.□ or S2.□ Products

WP V2.1

---

**Applicable models**  
JXC91□ Series

WP S2.2 T1.1

---

**Applicable models**  
JXCE□□ Series  
JXCP1□ Series  
JXCD1□ Series  
JXCL□□ Series

### JXC□□ Series Version V1.□ or S1.□ Products

XR V1.0

---

**Applicable models**  
JXC91□ Series

XR S1.0 T1.0

---

**Applicable models**  
JXCE□□ Series  
JXCP1□ Series  
JXCD1□ Series  
JXCL□□ Series

Model Selection
Battery-less Absolute <b>LEKFS</b>
AC Servo Motor <b>LEKFS</b>
Auto Switch
<b>JXC51/61</b>
<b>JXC□</b>
<b>LECSA LECS□-T</b>
<b>LECYM LECYU</b>
Specific Product Precautions

# JXC51/61/E□/91/P1/D1/L□/M1 Series

## Blank Controller Versions and Applicable Actuator Sizes

- The applicable electric actuator size range differs depending on the controller version.  
Be sure to confirm the controller version before using a blank controller.

### Blank Controller Versions/Applicable Electric Actuator Sizes

Blank controller		Applicable electric actuator size										
Series	Controller version	LEFS□E	LEFB□E	LEKFS□E	LEY□E	LEY□E-X8	LEYG□E	LES□E	LESH□E	LESYH□E	LER□E	LEHF□E
JXC91□ series JXCD1□ series JXCE1□ series JXCP1□ series JXCL1□ series	Version 3.4 (V3.4, S3.4) Version 3.5 (V3.5, S3.5)	25, 32, 40	25, 32, 40	16, 25, 32, 40	25, 32, 40	25, 32, 40	25, 32, 40	25	25	16, 25	50	32, 40
	Version 3.6 (V3.6, S3.6) or higher	16, 25, 32, 40	16, 25, 32, 40		16, 25, 32, 40		16, 25, 32, 40			8, 16, 25		
JXCM1□ series JXC51/61 series	Version 3.4 (V3.4, S3.4)	25, 32, 40	25, 32, 40	16, 25, 32, 40	25, 32, 40	25, 32, 40	25, 32, 40	25	25	16, 25	50	32, 40
	Version 3.5 (V3.5, S3.5) or higher	16, 25, 32, 40	16, 25, 32, 40		16, 25, 32, 40		16, 25, 32, 40			8, 16, 25		
JXC□F series	All versions											



# AC Servo Motor Drivers

## LECSA/LECS□-T/LECY□ Series



### Pulse Input Type/Positioning Type ..... p. 97

#### Incremental Type/LECSA Series



### Pulse Input Type/Positioning Type ..... p. 97

#### Absolute Type/LECSB-T Series



With STO sub-function

### CC-Link Direct Input Type ..... p. 97

#### Absolute Type/LECS-C-T Series



### SSCNET III/H Type ..... p. 97

#### Absolute Type/LECSS-T Series



With STO sub-function

### MECHATROLINK-II Type ..... p. 116

#### Absolute Type/LECYM Series



With STO sub-function

### MECHATROLINK-III Type ..... p. 116

#### Absolute Type/LECYU Series



With STO sub-function

### ● Specific Product Precautions p. 126

Model Selection

Battery-less Absolute  
LEKFS

AC Servo Motor  
LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product Precautions

# AC Servo Motor Driver

## Incremental Type

**LECSA Series** (Pulse Input Type/Positioning Type)



\* For details, refer to page 128.

## Absolute Type

**LECSB-T** (Pulse Input Type/Positioning Type)/**LECS-C-T** (CC-Link Direct Input Type)



**LECSS-T** (SSCNET III/H Type) **Series**

### How to Order

#### For LECSA

**LECSA 1 - S1**

Driver type

<b>A</b>	Pulse input type/Positioning type (For incremental encoder)
----------	--

Power supply voltage

<b>1</b>	100 to 120 VAC, 50/60 Hz
<b>2</b>	200 to 230 VAC, 50/60 Hz

Compatible motor type

Symbol	Type	Capacity	Encoder
<b>S1</b>	AC servo motor (S2 <sup>*1</sup> )	100 W	Incremental
<b>S3</b>	AC servo motor (S3 <sup>*1</sup> )	200 W	

\*1 The symbol shows the motor type (actuator).



LECSA

- \* If an I/O connector is required, order the part number "LE-CSN□" separately.
- \* If an I/O cable is required, order the part number "LEC-CSN□-1" separately.

#### For LECSB-T/LECS-C-T/LECSS-T

**LECSB 2 - T5**

Driver type

<b>B</b>	Pulse input type/Positioning type (For absolute encoder)
<b>C</b>	CC-Link direct input type (For absolute encoder)
<b>S</b>	SSCNET III/H type (For absolute encoder)

Power supply voltage

<b>2</b>	200 to 240 VAC, 50/60 Hz (For LECSB2-T/LECSS2-T)
	200 to 230 VAC, 50/60 Hz (For LECS-C2-T)

Compatible motor type

Symbol	Type	Capacity	Encoder
<b>T5</b>	AC servo motor (T6 <sup>*1</sup> )	100 W	Absolute
<b>T7</b>	AC servo motor (T7 <sup>*1</sup> )	200 W	

\*1 The symbol shows the motor type (actuator).

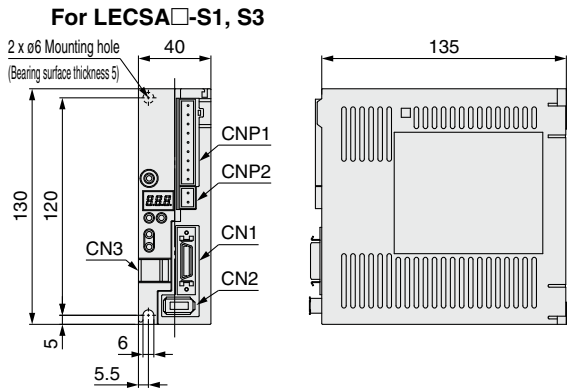


LECSB-T LECS-C-T LECS-S-T

- \* If an I/O connector is required, order the part number "LE-CSN□" separately.
  - \* If an I/O cable is required, order the part number "LEC-CSN□-1" separately.
- (Since the electric actuator will not operate without forced stop (EM2) wiring when using the LECSB-T in any mode other than positioning mode, an I/O connector or an I/O cable is required.)

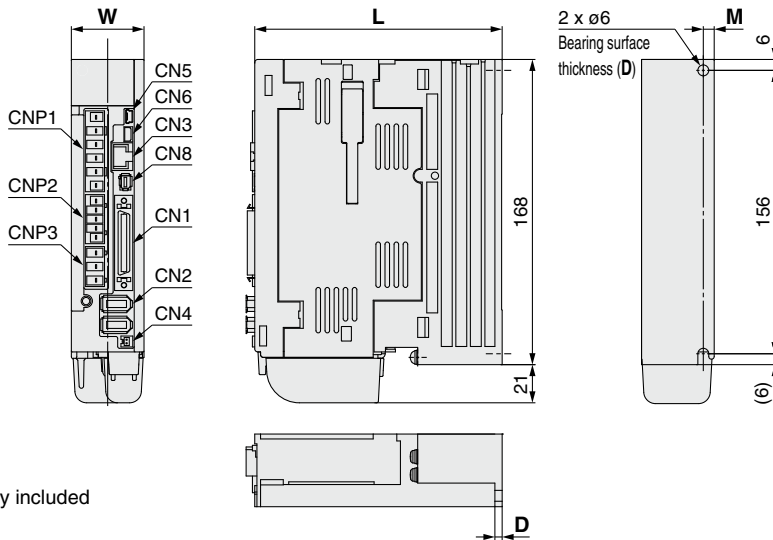
**Dimensions**

**LECSA□**



Connector name	Description
<b>CN1</b>	I/O signal connector
<b>CN2</b>	Encoder connector
<b>CN3</b>	USB communication connector
<b>CNP1</b>	Main circuit power supply connector
<b>CNP2</b>	Control circuit power supply connector

**LECSB2-T□**



Connector name	Description
<b>CN1</b>	I/O signal connector
<b>CN2</b>	Encoder connector
<b>CN3</b>	RS-422 communication connector
<b>CN4</b>	Battery connector
<b>CN5</b>	USB communication connector
<b>CN6</b>	Analog monitor connector
<b>CN8</b>	STO input signal connector
<b>CNP1</b>	Main circuit power supply connector
<b>CNP2</b>	Control circuit power supply connector
<b>CNP3</b>	Servo motor power connector

Dimensions		[mm]			
Model	W	L	D	M	
<b>LECSB2-T5</b>	40	135	4	6	
<b>LECSB2-T7</b>					

\* Battery included

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

**JXC51/61**

**JXC□**

**LECSA**  
**LECS□-T**

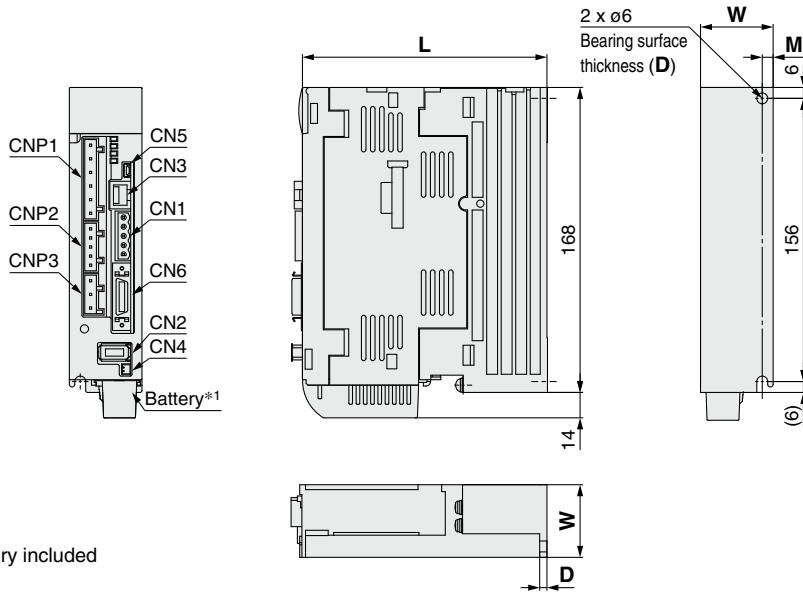
**LECYM**  
**LECYU**

Specific Product  
Precautions

# LECSA/LECS□-T Series

## Dimensions

### LECS2-T□



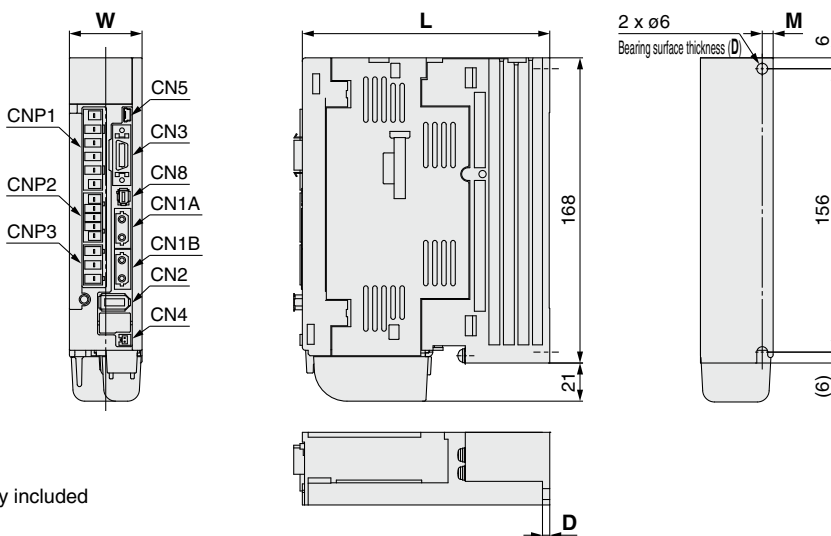
\*1 Battery included

Connector name	Description
<b>CN1</b>	CC-Link connector
<b>CN2</b>	Encoder connector
<b>CN3</b>	RS-422 communication connector
<b>CN4</b>	Battery connector
<b>CN5</b>	USB communication connector
<b>CN6</b>	I/O signal connector
<b>CNP1</b>	Main circuit power supply connector
<b>CNP2</b>	Control circuit power supply connector
<b>CNP3</b>	Servo motor power connector

### Dimensions [mm]

Model	W	L	D	M
<b>LECS2-T5</b>	40	135	4	6
<b>LECS2-T7</b>				

### LECS2-T□



\* Battery included

Connector name	Description
<b>CN1A</b>	Front axis connector for SSCNET III/H
<b>CN1B</b>	Rear axis connector for SSCNET III/H
<b>CN2</b>	Encoder connector
<b>CN3</b>	I/O signal connector
<b>CN4</b>	Battery connector
<b>CN5</b>	USB communication connector
<b>CN8</b>	STO input signal connector
<b>CNP1</b>	Main circuit power supply connector
<b>CNP2</b>	Control circuit power supply connector
<b>CNP3</b>	Servo motor power connector

### Dimensions [mm]

Model	W	L	D	M
<b>LECS2-T5</b>	40	135	4	6
<b>LECS2-T7</b>				

**Specifications**

**LECSA Series**

Model		LECSA1-S1	LECSA1-S3	LECSA2-S1	LECSA2-S3
Compatible motor capacity [W]		100	200	100	200
Compatible encoder		Incremental 17-bit encoder (Resolution: 131072 p/rev)			
Main power supply	Power voltage [V]	Single phase 100 to 120 VAC (50/60 Hz)		Single phase 200 to 230 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Single phase 85 to 132 VAC		Single phase 170 to 253 VAC	
	Rated current [A]	3.0	5.0	1.5	2.4
Control power supply	Control power supply voltage [V]	24 VDC			
	Allowable voltage fluctuation [V]	21.6 to 26.4 VDC			
	Rated current [A]	0.5			
Parallel input		6 inputs			
Parallel output		4 outputs			
Max. input pulse frequency [pps]		1 M (for differential receiver), 200 k (for open collector)*2			
Function	In-position range setting [pulse]	0 to ±65535 (Command pulse unit)			
	Error excessive	±3 rotations			
	Torque limit	Parameter setting			
	Communication	USB communication			
	Point table	Up to 7 points			
Operating temperature range [°C]		0 to 55 (No freezing)			
Operating humidity range [%RH]		90 or less (No condensation)			
Storage temperature range [°C]		-20 to 65 (No freezing)			
Storage humidity range [%RH]		90 or less (No condensation)			
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)			
Weight [g]		600			

**LECSB-T Series**

Model		LECSB2-T5	LECSB2-T7
Compatible motor capacity [W]		100	200
Compatible encoder		Absolute 22-bit encoder (Resolution: 4194304 p/rev)	
Main power supply	Power voltage [V]	Three phase 200 to 240 VAC (50/60 Hz), Single phase 200 to 240 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Three phase 170 to 264 VAC (50/60 Hz), Single phase 170 to 264 VAC (50/60 Hz)	
	Rated current [A]	0.9	1.5
Control power supply	Control power supply voltage [V]	Single phase 200 to 240 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Single phase 170 to 264 VAC	
	Rated current [A]	0.2	
Parallel input		10 inputs	
Parallel output		6 outputs	
Max. input pulse frequency [pps]		4 M (for differential receiver), 200 k (for open collector)	
Function	In-position range setting [pulse]	0 to ±65535 (Command pulse unit)	
	Error excessive	±3 rotations	
	Torque limit	Parameter setting or external analog input setting (0 to 10 VDC)	
	Communication	USB communication, RS422 communication*1	
	Point table	Up to 255 points	
	Pushing operation	Point table no. input method, Up to 127 points	
Operating temperature range [°C]		0 to 55 (No freezing)	
Operating humidity range [%RH]		90 or less (No condensation)	
Storage temperature range [°C]		-20 to 65 (No freezing)	
Storage humidity range [%RH]		90 or less (No condensation)	
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)	
Safety function		STO (IEC/EN 61800-5-2)	
Safety standards*2		EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL3, EN 61800-5-2	
Weight [g]		800	

\*1 USB communication and RS422 communication cannot be performed at the same time.

\*2 The safety level depends on the set value of the driver parameter [Pr. PF18 STO diagnosis error detection time] and whether STO input diagnosis by TOFB output is performed or not. Refer to the LECSB-T operation manual for details.

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC□

LECSA LECS□-T

LECYM LECYU

Specific Product Precautions

# LECSA/LECS□-T Series

## Specifications

### LECSC-T Series

Model		LECSC2-T5	LECSC2-T7	
Compatible motor capacity [W]		100	200	
Compatible encoder		Absolute 18-bit encoder (Resolution: 262144 p/rev)		
Main power supply	Power voltage [V]	Three phase 200 to 230 VAC (50/60 Hz), Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Three phase 170 to 253 VAC, Single phase 170 to 253 VAC		
	Rated current [A]	0.9	1.5	
Control power supply	Control power supply voltage [V]	Single phase 200 to 230 VAC (50/60 Hz)		
	Allowable voltage fluctuation [V]	Single phase 170 to 253 VAC		
	Rated current [A]	0.2		
Communication specifications	Applicable Fieldbus protocol (Version)	CC-Link communication (Ver. 1.10)		
	Connection cable	CC-Link Ver. 1.10 compliant cable (Shielded 3-core twisted pair cable)*1		
	Remote station number	1 to 64		
	Cable length	Communication speed [bps]/ Maximum overall cable length [m]	16 k/1200, 625 k/900, 2.5 M/400, 5 M/160, 10 M/100	
		Cable length between stations [m]	0.2 or more	
	I/O occupation area (Inputs/Outputs)	1 station occupied (Remote I/O 32 points/32 points)/(Remote register 4 words/4 words) 2 stations occupied (Remote I/O 64 points/64 points)/(Remote register 8 words/8 words)		
Number of connectable drivers	Up to 42 (when 1 station is occupied by 1 driver), Up to 32 (when 2 stations are occupied by 1 driver), when there are only remote device stations.			
Command method	Remote register input	Available with CC-Link communication (2 stations occupied)		
	Point table No. input	Available with CC-Link communication, RS422 communication CC-Link communication (1 station occupied): 31 points, CC-Link communication (2 stations occupied): 255 points RS422 communication: 255 points		
	Indexer positioning input	Available with CC-Link communication CC-Link communication (1 station occupied): 31 points, CC-Link communication (2 stations occupied): 255 points		
Communication function		USB communication, RS-422 communication*2		
Operating temperature range [°C]		0 to 55 (No freezing)		
Operating humidity range [%RH]		90 or less (No condensation)		
Storage temperature range [°C]		-20 to 65 (No freezing)		
Storage humidity range [%RH]		90 or less (No condensation)		
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)		
Weight [g]		800		

\*1 If the system comprises of both CC-Link Ver. 1.00 and Ver. 1.10 compliant cables, Ver. 1.00 specifications are applied to the overall cable length and the cable length between stations.

\*2 USB communication and RS422 communication cannot be performed at the same time.

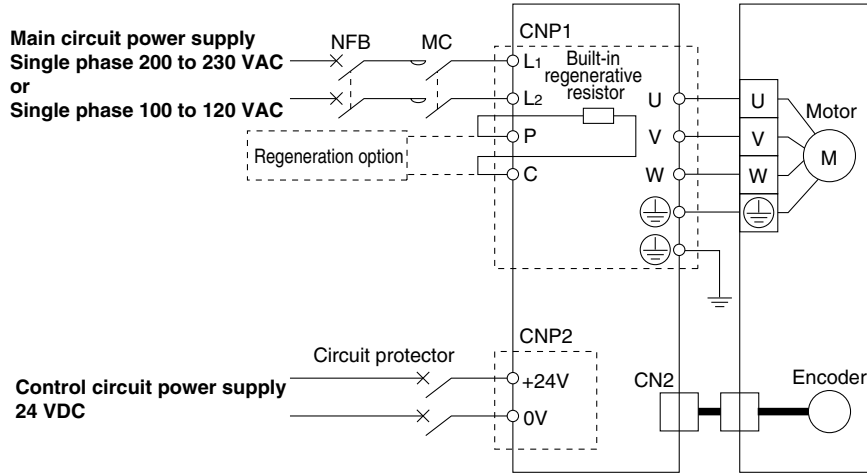
### LECSS-T Series

Model		LECSS2-T5	LECSS2-T7
Compatible motor capacity [W]		100	200
Compatible encoder		Absolute 22-bit encoder (Resolution: 4194304 p/rev)	
Main power supply	Power voltage [V]	Three phase 200 to 240 VAC (50/60 Hz), Single phase 200 to 240 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Three phase 170 to 264 VAC (50/60 Hz), Single phase 170 to 264 VAC (50/60 Hz)	
	Rated current [A]	0.9	1.5
Control power supply	Control power supply voltage [V]	Single phase 200 to 240 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Single phase 170 to 264 VAC	
	Rated current [A]	0.2	
Applicable Fieldbus protocol		SSCNET III/H (High-speed optical communication)	
Communication function		USB communication	
Operating temperature range [°C]		0 to 55 (No freezing)	
Operating humidity range [%RH]		90 or less (No condensation)	
Storage temperature range [°C]		-20 to 65 (No freezing)	
Storage humidity range [%RH]		90 or less (No condensation)	
Insulation resistance [MΩ]		Between the housing and SG: 10 (500 VDC)	
Safety function		STO (IEC/EN 61800-5-2)	
Safety standards*1		EN ISO 13849-1 Category 3 PL d, EN 61508 SIL 2, EN 62061 SIL CL2, EN 61800-5-2	
Weight [g]		800	

\*1 Refer to the LECSS-T operation manual for details.

## Power Supply Wiring Example: LECSA

LECSA□-□

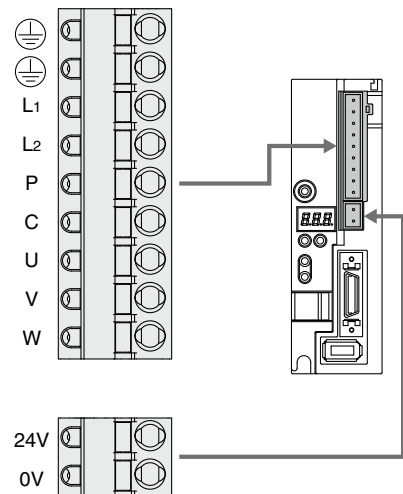


### Main Circuit Power Supply Connector: CNP1 \* Accessory

Terminal name	Function	Details
	Protective earth (PE)	Should be grounded by connecting the servo motor's earth terminal and the control panel's protective earth (PE)
L1	Main circuit power supply	Connect the main circuit power supply. LECSA1: Single phase 100 to 120 VAC, 50/60 Hz LECSA2: Single phase 200 to 230 VAC, 50/60 Hz
L2		
P	Regeneration option	Terminal to connect regeneration option LECSA□-S1: Not connected at time of shipping LECSA□-S3, S4: Connected at time of shipping * If regeneration option is required for "Model Selection," connect to this terminal.
C		
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	

### Control Circuit Power Supply Connector: CNP2 \* Accessory

Terminal name	Function	Details
24V	Control circuit power supply (24 V)	24 V side of the control circuit power supply (24 VDC) supplied to the driver
0V	Control circuit power supply (0 V)	0 V side of the control circuit power supply (24 VDC) supplied to the driver



Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

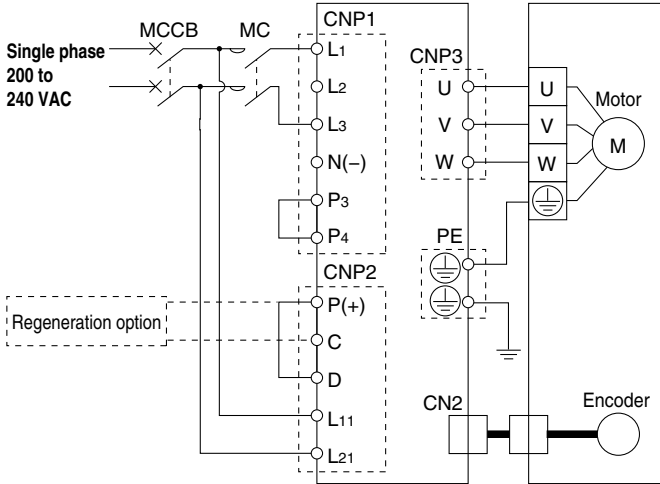
LECYM  
LECYU

Specific Product  
Precautions

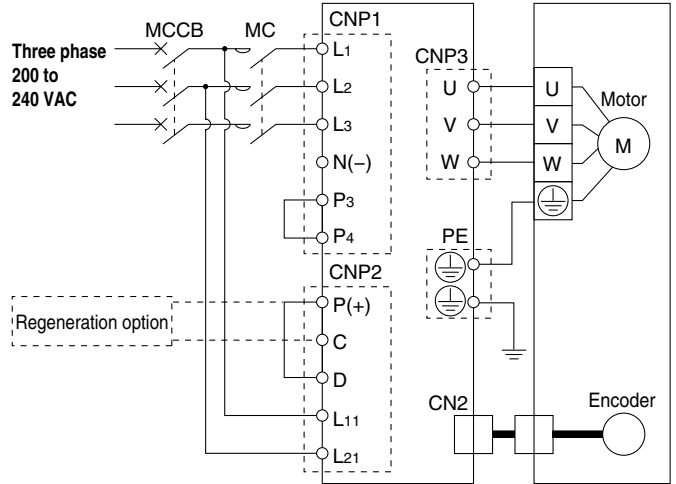
# LECSA/LECS□-T Series

## Power Supply Wiring Example: LECSB2-T□, LECSS2-T□

For single phase 200 VAC



For three phase 200 VAC



\* For single phase 200 to 240 VAC, power supply should be connected to L1 and L3 terminals, with nothing connected to L2.

### Main Circuit Power Supply Connector: CNP1 \* Accessory

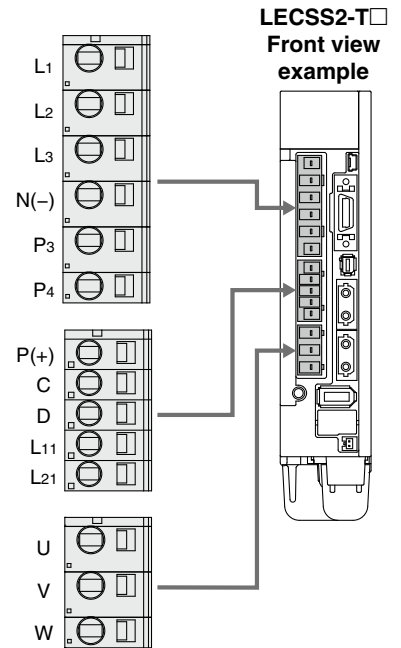
Terminal name	Function	Details
L1	Main circuit power supply	Connect the main circuit power supply. LECSB2-T/LECSS2-T: Single phase 200 to 240 VAC, 50/60 Hz Connection terminal: L1, L3 Three phase 200 to 240 VAC, 50/60 Hz Connection terminal: L1, L2, L3
L2		
L3		
N(-)	Do not connect.	
P3	Connect between P3 and P4. (Connected at time of shipping)	
P4		

### Control Circuit Power Supply Connector: CNP2 \* Accessory

Terminal name	Function	Details
P(+)	Regeneration option	Connect between P(+) and D. (Connected at time of shipping) * If regeneration option is required for "Model Selection," connect to this terminal.
C		
D		
L11	Control circuit power supply	Connect the control circuit power supply. LECSB2-T/LECSS2-T: Single phase 200 to 240 VAC, 50/60 Hz Connection terminal: L11, L21
L21		

### Motor Connector: CNP3 \* Accessory

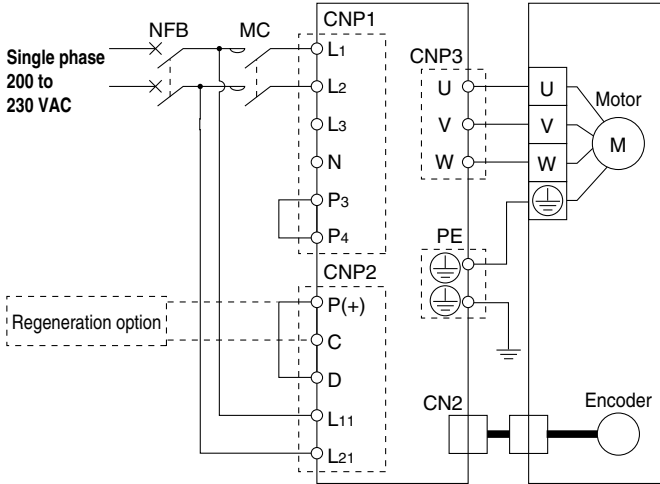
Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	



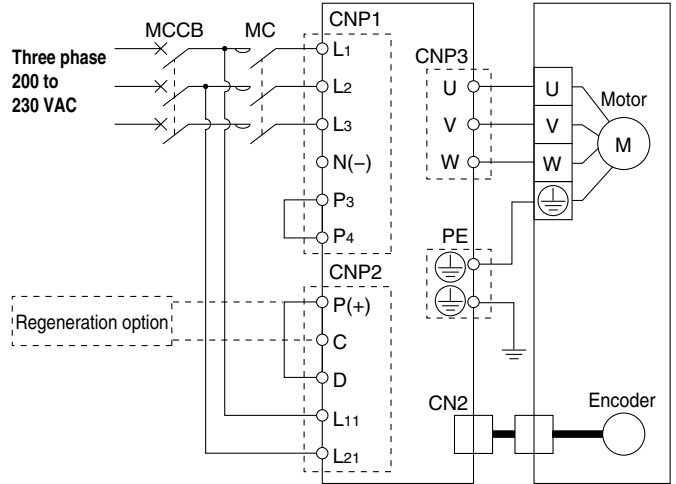


## Power Supply Wiring Example: **LECS2-T□**

**For single phase 200 VAC**



**For three phase 200 VAC**



\* For single phase 200 to 230 VAC, power supply should be connected to L1 and L2 terminals, with nothing connected to L3.

### Main Circuit Power Supply Connector: **CNP1** \* Accessory

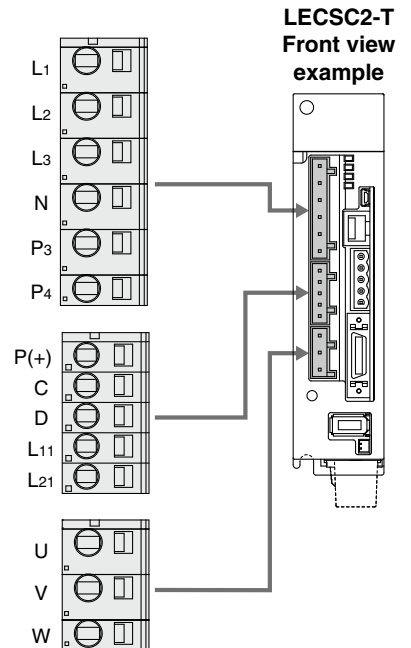
Terminal name	Function	Details
L1	Main circuit power supply	Connect the main circuit power supply. LECS2-T: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1, L2 Three phase 200 to 230 VAC, 50/60 Hz Connection terminal: L1, L2, L3
L2		
L3		
N	Do not connect.	
P3	Connect between P3 and P4. (Connected at time of shipping)	
P4		

### Control Circuit Power Supply Connector: **CNP2** \* Accessory

Terminal name	Function	Details
P(+)	Regeneration option	Connect between P and D. (Connected at time of shipping) * If regeneration option is required for "Model Selection," connect to this terminal.
C		
D		
L11	Control circuit power supply	Connect the control circuit power supply. LECS2-T: Single phase 200 to 230 VAC, 50/60 Hz Connection terminal: L11, L21
L21		

### Motor Connector: **CNP3** \* Accessory

Terminal name	Function	Details
U	Servo motor power (U)	Connect to motor cable (U, V, W).
V	Servo motor power (V)	
W	Servo motor power (W)	



Model Selection

---

Battery-less Absolute

**LEKFS**

---

AC Servo Motor

**LEKFS**

---

Auto Switch

---

JXC51/61

---

JXC□

---

LECSA  
LECS□-T

---

LECYM  
LECYU

---

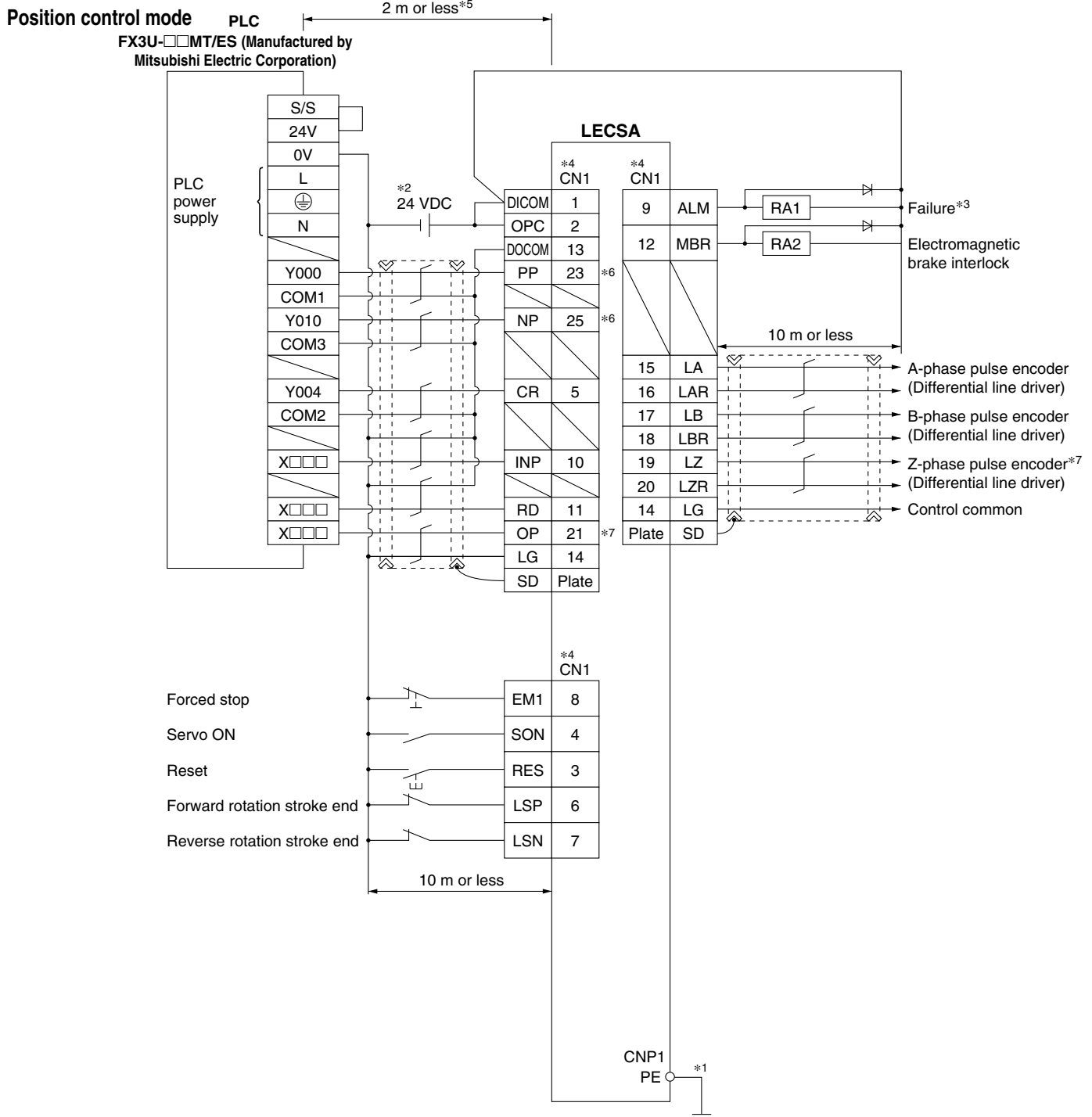
Specific Product  
Precautions

# LECSA/LECS□-T Series

## Control Signal Wiring Example: LECSA

### LECSA□-□

This wiring example shows connection with a PLC (FX3U-□□MT/ES) manufactured by Mitsubishi Electric Corporation as when used in position control mode. Refer to the LECSA series Operation Manual and any technical literature or operation manuals for your PLC and positioning unit before connecting to another PLC or positioning unit.

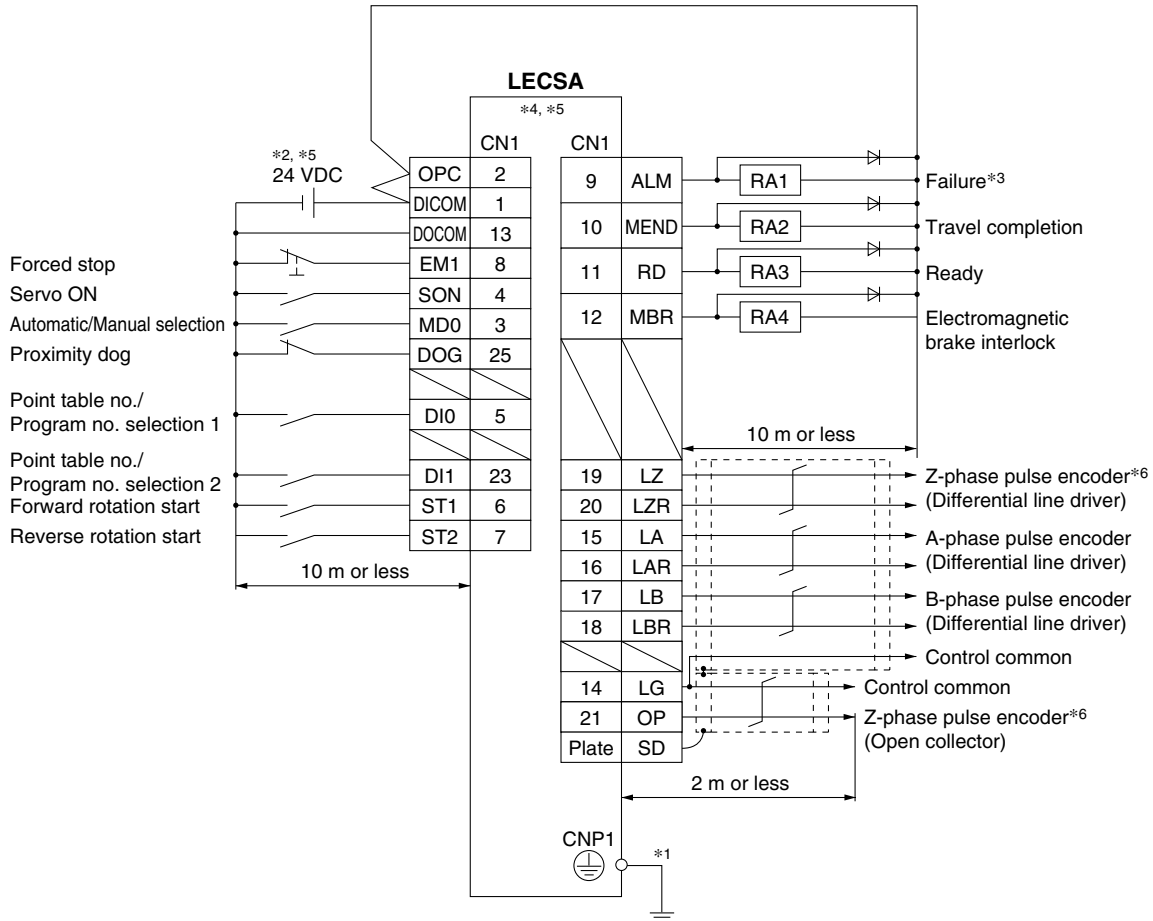


- \*1 For preventing electric shock, be sure to connect the driver main circuit power supply connector (CNP1)'s protective earth (PE) terminal (marked ⊕) to the control panel's protective earth (PE).
- \*2 For interface use, supply 24 VDC  $\pm 10\%$  200 mA using an external source. 200 mA is the value when all I/O command signals are being used. In addition, reducing the number of inputs/outputs can decrease the current capacity. Refer to the Operation Manual for required current for interface.
- \*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the PLC signal using the sequence program.
- \*4 Signals of the same name are connected inside the driver.
- \*5 For command pulse input with an open collector method. When a positioning unit loaded with a differential line driver method is used, it is 10 m or less.
- \*6 If the command pulse input is open collector method, it supports only the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.
- \*7 The Z-phase pulse encoder corresponds to the differential line driver method and the open collector method. If the Z-phase pulse encoder is using the open collector method, it supports only the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

## Control Signal Wiring Example: LECSA

In this wiring example, the device of the CN1-10 pin in the initial status has been changed to the device shown below. For details on the device and changing method, refer to the LECSA series Operation Manual.  
 CN1-10: MEND (Travel completion)

### Positioning mode (Point table method) For sink (NPN) I/O interface

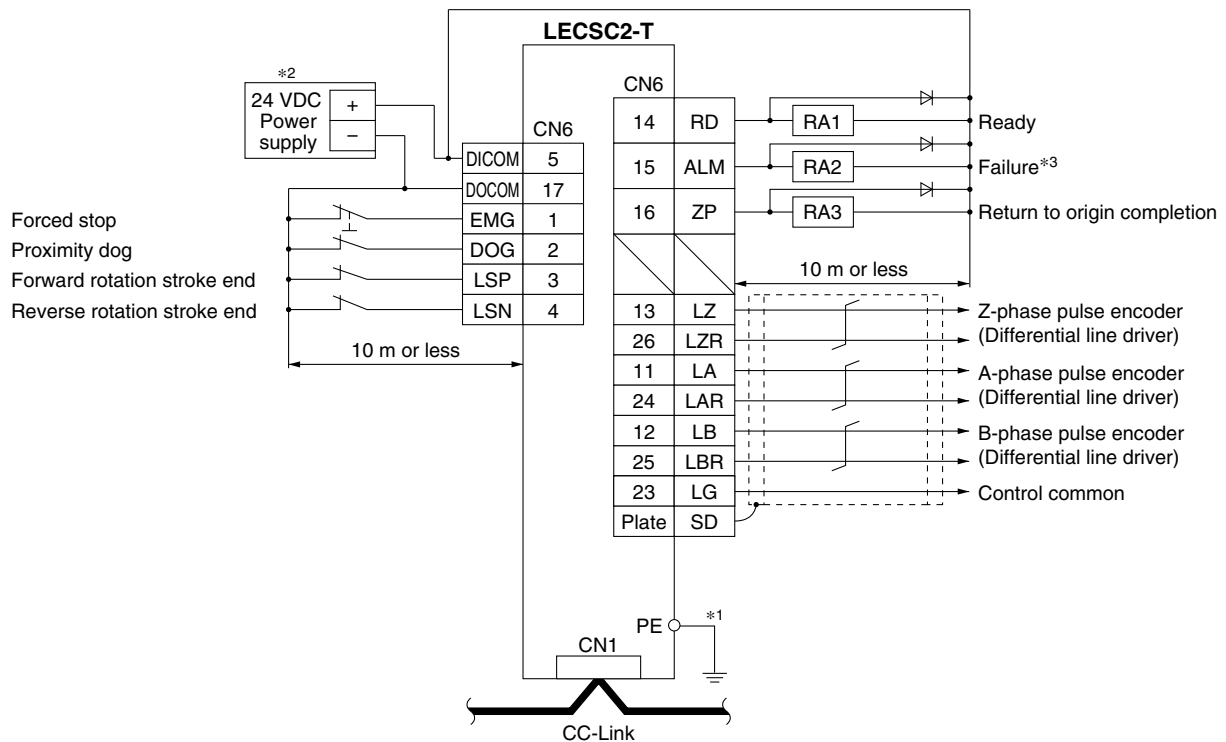


- \*1 For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ⊕) to the control panel's protective earth (PE).
- \*2 For interface use, supply 24 VDC ±10% 200 mA using an external source. 200 mA is the value when all I/O command signals are being used. In addition, reducing the number of inputs/outputs can decrease the current capacity.
- \*3 The failure (ALM) is normally ON.
- \*4 Signals of the same name are connected inside the driver.
- \*5 The wiring example is for the sink (NPN) type interface. Refer to the LECSA series Operation Manual for the source (PNP) type interface. Note that the 23 pin and 25 pin cannot be used for the source type interface.
- \*6 The Z-phase pulse encoder corresponds to the differential line driver method and the open collector method. If the Z-phase pulse encoder is using the open collector method, it supports only the sink (NPN) type interface. It does not correspond to the source (PNP) type interface.

Model Selection  
 Battery-less Absolute LEKFS  
 AC Servo Motor LEKFS  
 Auto Switch  
 JXC51/61  
 JXC□  
 LECSA LECS□-T  
 LECYM LECYU  
 Specific Product Precautions

# LECSA/LECS□-T Series

## Control Signal Wiring Example: LECS2-T□



\*1 For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked  $\oplus$ ) to the control panel's protective earth (PE).

\*2 For interface use, supply 24 VDC  $\pm 10\%$  150 mA using an external source.

\*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the PLC signal using the sequence program.

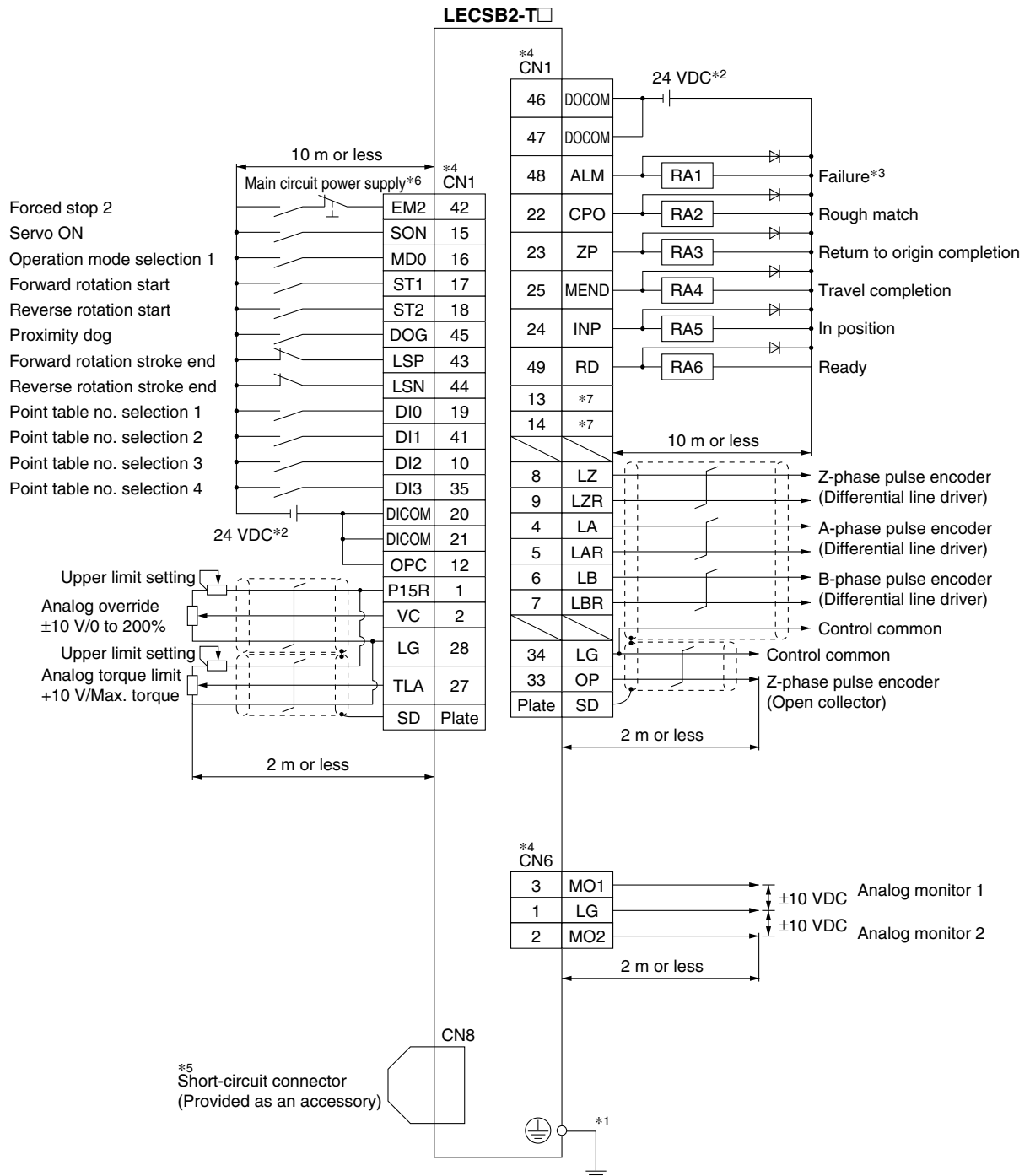


# LECSA/LECS□-T Series

## Control Signal Wiring Example: LECSB2-T□

In this wiring example, the devices of the CN1-22 pin, CN1-23 pin, and CN1-25 pin in the initial status have been changed to the devices shown below. For details on the devices and changing method, refer to the LECSB2-T series Operation Manual.  
 CN1-22: CPO (Rough match)/CN1-23: ZP (Return to origin completion)/CN1-25: MEND (Travel completion)

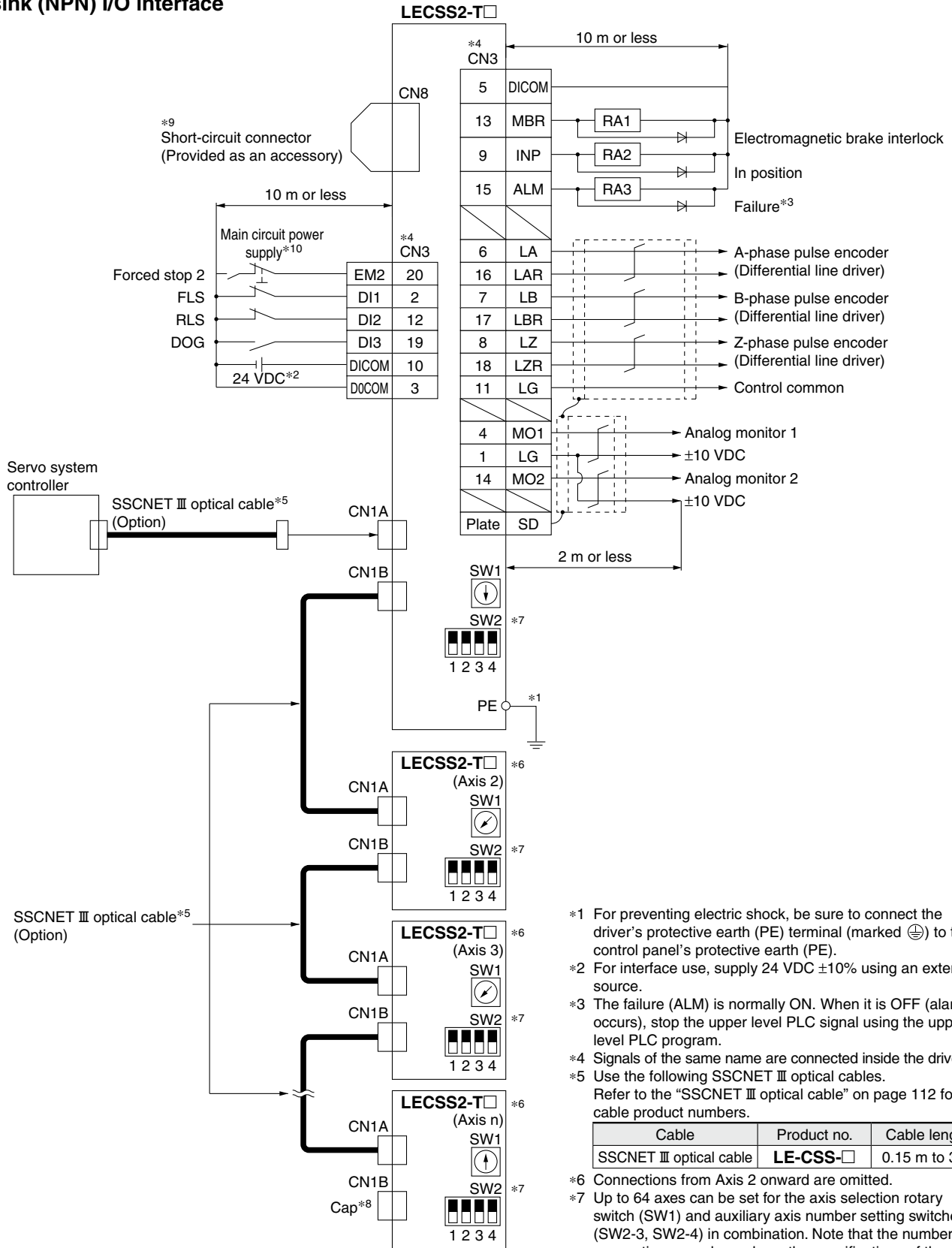
### Positioning mode (Point table method) For sink (NPN) I/O interface



\*1 For preventing electric shock, be sure to connect the servo amplifier's protective earth (PE) terminal (marked ⊕) to the control panel's protective earth (PE).  
 \*2 For interface use, supply 24 VDC ±10% using an external source. Set the total current capacity to 500 mA. 500 mA is the value when all I/O command signals are being used. In addition, reducing the number of inputs/outputs can decrease the current capacity.  
 \*3 The ALM (Failure) is normally ON. (Normally closed contact)  
 \*4 Signals of the same name are connected inside the servo amplifier.  
 \*5 When not using the STO function, use the servo amplifier with the short-circuit connector (provided as an accessory) inserted.  
 \*6 Configure a circuit to turn off EM2 when the main circuit power is turned off to prevent any unexpected restarts of the driver.  
 \*7 Output devices are not assigned in the initial status. Assign the output devices as necessary.

## Control Signal Wiring Example: LECSS2-T□

For sink (NPN) I/O interface



- \*1 For preventing electric shock, be sure to connect the driver's protective earth (PE) terminal (marked ⊕) to the control panel's protective earth (PE).
- \*2 For interface use, supply 24 VDC ±10% using an external source.
- \*3 The failure (ALM) is normally ON. When it is OFF (alarm occurs), stop the upper level PLC signal using the upper level PLC program.
- \*4 Signals of the same name are connected inside the driver.
- \*5 Use the following SSCNET III optical cables. Refer to the "SSCNET III optical cable" on page 112 for cable product numbers.

Cable	Product no.	Cable length
SSCNET III optical cable	LE-CSS-□	0.15 m to 3 m

- \*6 Connections from Axis 2 onward are omitted.
- \*7 Up to 64 axes can be set for the axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-3, SW2-4) in combination. Note that the number of connection axes depends on the specifications of the upper level PLC.
- \*8 Be sure to place a cap on unused CN1A/CN1B.
- \*9 When not using the STO function, use the driver with the short-circuit connector (provided as an accessory) inserted.
- \*10 Configure a circuit to turn off EM2 when the main circuit power is turned off to prevent any unexpected restarts of the driver.

# LECSA/LECS□-T Series

## Options

Motor cable, Lock cable, Encoder cable (LECSA, LECS□-T common)

**LE - CSM - S 5 A**

**Motor type**  
**S** AC servo motor

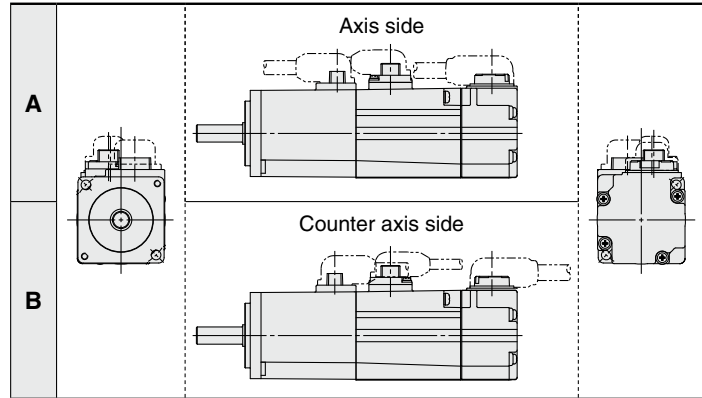
**Cable description**  
**M** Motor cable  
**B** Lock cable  
**E** Encoder cable

**Cable type**  
**S** Standard cable  
**R** Robotic cable

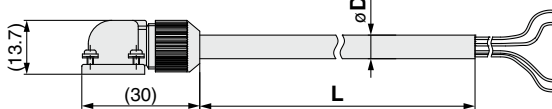
**Cable length (L) [m]**

<b>2</b>	2
<b>5</b>	5
<b>A</b>	10

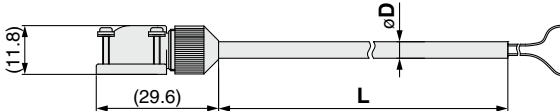
**Direction of connector**



**LE-CSM-□□: Motor cable**



**LE-CSB-□□: Lock cable\*1**



**LE-CSE-□□: Encoder cable**



\*1 If using an actuator with a lock, a lock cable is required.

Product no.	øD
<b>LE-CSM-S□A</b>	6.2
<b>LE-CSM-S□B</b>	6.2
<b>LE-CSM-R□A</b>	5.7
<b>LE-CSM-R□B</b>	5.7

Product no.	øD
<b>LE-CSB-S□A</b>	4.7
<b>LE-CSB-S□B</b>	4.7
<b>LE-CSB-R□A</b>	4.5
<b>LE-CSB-R□B</b>	4.5

**Weight**

Product no.	Length [m]	Weight [g]
<b>LE-CSM-S2□</b>	2	180
<b>LE-CSM-S5□</b>	5	400
<b>LE-CSM-SA□</b>	10	800
<b>LE-CSM-R2□</b>	2	180
<b>LE-CSM-R5□</b>	5	400
<b>LE-CSM-RA□</b>	10	800

**Weight**

Product no.	Length [m]	Weight [g]
<b>LE-CSB-S2□</b>	2	80
<b>LE-CSB-S5□</b>	5	200
<b>LE-CSB-SA□</b>	10	400
<b>LE-CSB-R2□</b>	2	80
<b>LE-CSB-R5□</b>	5	200
<b>LE-CSB-RA□</b>	10	400

**Weight**

Product no.	Length [m]	Weight [g]
<b>LE-CSE-S2□</b>	2	220
<b>LE-CSE-S5□</b>	5	600
<b>LE-CSE-SA□</b>	10	1200
<b>LE-CSE-R2□</b>	2	220
<b>LE-CSE-R5□</b>	5	600
<b>LE-CSE-RA□</b>	10	1200

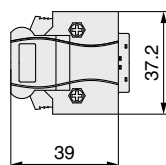
**I/O connector (Without cable, Connector only)**

**LE - CSN A**

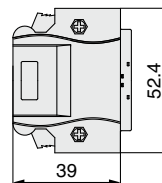
**Driver type**

<b>A</b>	<b>LECSA□, LECS2-T□</b>
<b>B</b>	<b>LECSB2-T□</b>
<b>S</b>	<b>LECSS2-T□</b>

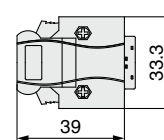
**LE-CSNA**



**LE-CSNB**



**LE-CSNS**



**Weight**

Product no.	Weight [g]
<b>LE-CSNA</b>	25
<b>LE-CSNB</b>	30
<b>LE-CSNS</b>	16

\* LE-CSNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent  
 LE-CSNB: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent  
 LE-CSNS: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent

\* Applicable conductor size: AWG24 to 30

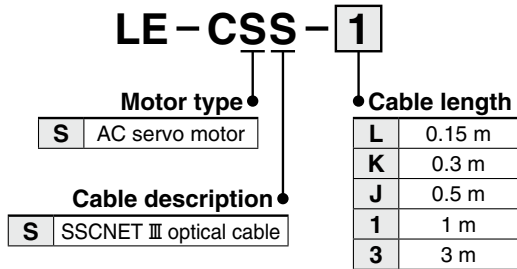
\* If using the LECSB-T in any mode other than positioning mode, forced stop (EM2) wiring is required in all cases. (The electric actuator will not operate without the wiring.)

Prepare an I/O connector or an I/O cable in advance.



## Options

### SSCNET III optical cable (LECSS2-T□)

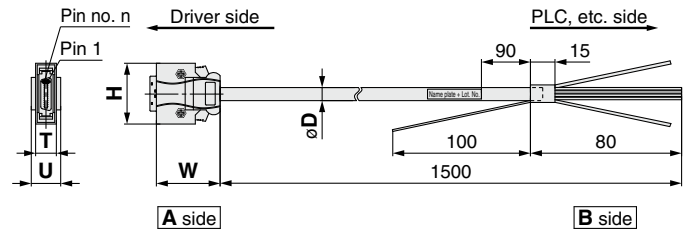
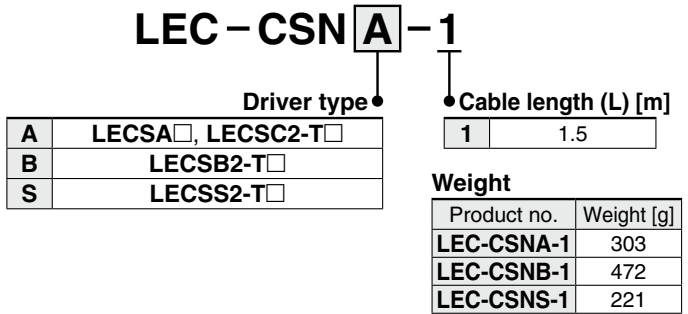


\* LE-CSS-□ is MR-J3BUS□M manufactured by Mitsubishi Electric Corporation.

#### Weight

Product no.	Length [m]	Weight [g]
<b>LE-CSS-L</b>	0.15	100
<b>LE-CSS-K</b>	0.3	100
<b>LE-CSS-J</b>	0.5	200
<b>LE-CSS-1</b>	1	200
<b>LE-CSS-3</b>	3	200

### I/O cable



- \* LEC-CSNA-1: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
- LEC-CSNB-1: 10150-3000PE (connector)/10350-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
- LEC-CSNS-1: 10120-3000PE (connector)/10320-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
- \* Conductor size: AWG24
- \* If using the LECSB-T in any mode other than positioning mode, forced stop (EM2) wiring is required in all cases. (The electric actuator will not operate without the wiring.)
- Prepare an I/O connector or an I/O cable in advance.

#### Cable O.D.

Product no.	øD
<b>LEC-CSNA-1</b>	11.1
<b>LEC-CSNB-1</b>	13.8
<b>LEC-CSNS-1</b>	9.1

#### Dimensions/Pin Nos.

Product no.	W	H	T	U	Pin no. n
<b>LEC-CSNA-1</b>	39	37.2	12.7	14	14
<b>LEC-CSNB-1</b>		52.4		18	26
<b>LEC-CSNS-1</b>		33.3		14	21

### Wiring

LEC-CSNA-1: Pin nos. 1 to 26  
 LEC-CSNB-1: Pin nos. 1 to 50  
 LEC-CSNS-1: Pin nos. 1 to 20

Connector pin no.	Pair no. of wire	Insulation color	Dot mark	Dot color	
A side	1	Orange	■	Red	
	2		■	Black	
	3	2	Light gray	■	Red
	4		■	Black	
	5	3	White	■	Red
	6		■	Black	
	7	4	Yellow	■	Red
	8		■	Black	
	9	5	Pink	■	Red
	10		■	Black	
	11	6	Orange	■ ■	Red
	12		■ ■	■ ■	Black
	13	7	Light gray	■ ■	Red
	14		■ ■	■ ■	Black
	15	8	White	■ ■	Red
	16		■ ■	■ ■	Black
	17	9	Yellow	■ ■	Red
	18		■ ■	■ ■	Black

Connector pin no.	Pair no. of wire	Insulation color	Dot mark	Dot color	
A side	19	10	Pink	■ ■	Red
	20		■ ■	■ ■	Black
	21	11	Orange	■ ■ ■ ■	Red
	22		■ ■ ■ ■	■ ■ ■ ■	Black
	23	12	Light gray	■ ■ ■ ■	Red
	24		■ ■ ■ ■	■ ■ ■ ■	Black
	25	13	White	■ ■ ■ ■	Red
	26		■ ■ ■ ■	■ ■ ■ ■	Black
	27	14	Yellow	■ ■ ■ ■	Red
	28		■ ■ ■ ■	■ ■ ■ ■	Black
	29	15	Pink	■ ■ ■ ■	Red
	30		■ ■ ■ ■	■ ■ ■ ■	Black
	31	16	Orange	■ ■ ■ ■ ■ ■	Red
	32		■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	Black
	33	17	Light gray	■ ■ ■ ■ ■ ■	Red
	34		■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	Black

Connector pin no.	Pair no. of wire	Insulation color	Dot mark	Dot color	
A side	35	18	White	■ ■ ■ ■ ■ ■	Red
	36		■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	Black
	37	19	Yellow	■ ■ ■ ■ ■ ■	Red
	38		■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	Black
	39	20	Pink	■ ■ ■ ■ ■ ■	Red
	40		■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	Black
	41	21	Orange	■ ■ ■ ■ ■ ■ (Continuous)	Red
	42		■ ■ ■ ■ ■ ■ (Continuous)	■ ■ ■ ■ ■ ■	Black
	43	22	Light gray	■ ■ ■ ■ ■ ■ (Continuous)	Red
	44		■ ■ ■ ■ ■ ■ (Continuous)	■ ■ ■ ■ ■ ■	Black
	45	23	White	■ ■ ■ ■ ■ ■ (Continuous)	Red
	46		■ ■ ■ ■ ■ ■ (Continuous)	■ ■ ■ ■ ■ ■	Black
	47	24	Yellow	■ ■ ■ ■ ■ ■ (Continuous)	Red
	48		■ ■ ■ ■ ■ ■ (Continuous)	■ ■ ■ ■ ■ ■	Black
	49	25	Pink	■ ■ ■ ■ ■ ■ (Continuous)	Red
	50		■ ■ ■ ■ ■ ■ (Continuous)	■ ■ ■ ■ ■ ■	Black

# LECSA/LECS□-T Series

## Options

Regeneration option (LECS□ common)

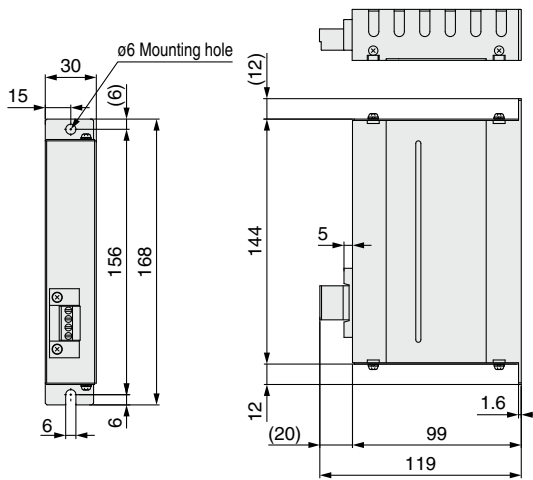
### LEC-MR-RB-12

#### Regeneration option type

<b>032</b>	Allowable regenerative power 30 W
<b>12</b>	Allowable regenerative power 100 W

\* Confirm regeneration option to be used in "Model Selection."

#### LEC-MR-RB-032

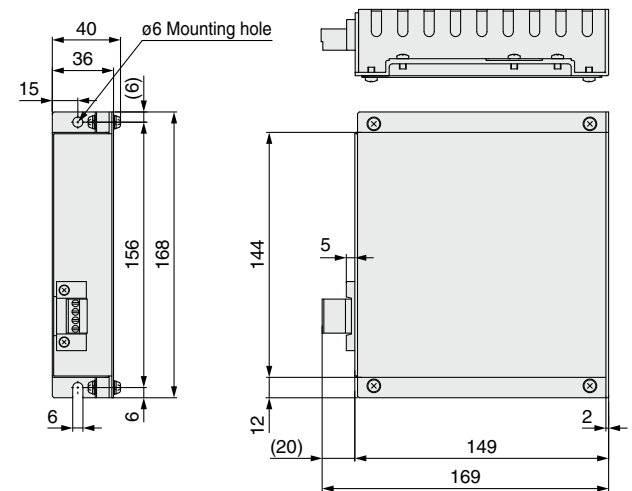


#### Weight

Product no.	Weight [kg]
<b>LEC-MR-RB-032</b>	0.5

\* MR-RB032 manufactured by Mitsubishi Electric Corporation

#### LEC-MR-RB-12

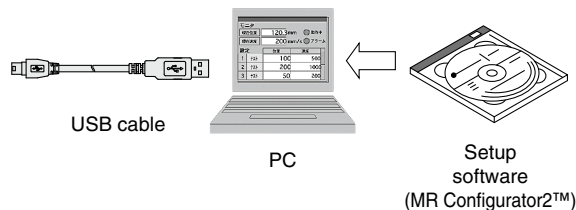


#### Weight

Product no.	Weight [kg]
<b>LEC-MR-RB-12</b>	1.1

\* MR-RB12 manufactured by Mitsubishi Electric Corporation

## Options



**Setup software (MR Configurator2™) (LECSA, LECSB2-T, LECSC2-T, LECSS-T common)**

## LEC-MRC2□

### • Display language

<b>N</b>	Japanese version
<b>E</b>	English version
<b>C</b>	Chinese version

\* SW1DNC-MRC2□ manufactured by Mitsubishi Electric Corporation. Refer to Mitsubishi Electric Corporation's website for operating environment and version upgrade information. MR Configurator2™ is a registered trademark or trademark of Mitsubishi Electric Corporation.

**Adjustment, waveform display, diagnostics, parameter reading/writing, and test operations can be performed on a PC.**

### Compatible PCs

When using the setup software (MR Configurator2™), use an IBM PC/AT compatible PC that meets the following operating conditions.

### Hardware Requirements

Equipment		Setup software (MR Configurator2™) <b>LEC-MRC2□</b>
*1, 2, 3, 4, 5, 6, 7, 8, 9, 10 PC	OS	Microsoft® Windows® 10 Edition Microsoft® Windows® 10 Enterprise Microsoft® Windows® 10 Pro Microsoft® Windows® 10 Home Microsoft® Windows® 8.1 Enterprise Microsoft® Windows® 8.1 Pro Microsoft® Windows® 8.1 Microsoft® Windows® 8 Enterprise Microsoft® Windows® 8 Pro Microsoft® Windows® 8 Microsoft® Windows® 7 Ultimate Microsoft® Windows® 7 Enterprise Microsoft® Windows® 7 Professional Microsoft® Windows® 7 Home Premium Microsoft® Windows® 7 Starter Microsoft® Windows Vista® Ultimate Microsoft® Windows Vista® Enterprise Microsoft® Windows Vista® Business Microsoft® Windows Vista® Home Premium Microsoft® Windows Vista® Home Basic Microsoft® Windows® XP Professional, Service Pack 3 or later Microsoft® Windows® XP Home Edition, Service Pack 3 or later
	Hard disk	1 GB or more of free space
	Communication interface	Uses the USB port
Display	Resolution: 1024 x 768 or more Must be capable of high color (16-bit) display. Connectable with the PCs listed above	
Keyboard	Connectable with the PCs listed above	
Mouse	Connectable with the PCs listed above	
Printer	Connectable with the PCs listed above	
USB cable*11	LEC-MR-J3USB	

- \*1 Before using a PC for setting LECSA point table method/program operation method, upgrade to version 1.18U (Japanese version)/version 1.19V (English version) or later. Refer to Mitsubishi Electric Corporation's website for version upgrade information.
- \*2 Windows® and Windows Vista® are registered trademarks of Microsoft Corporation in the United States and other countries.
- \*3 On some PCs, setup software (MR Configurator2™) may not run properly.
- \*4 The following functions cannot be used. If any of the following functions is used, this product may not operate normally.
  - Start of application in Windows® compatible mode
  - Fast User Switching
  - Remote Desktop
  - Windows XP Mode
  - Windows Touch or Touch
  - Modern UI
  - Client Hyper-V
  - Tablet Mode
  - Virtual desktop
  - 64-bit OSs are not supported, except for Microsoft® Windows®7 or later.
- \*5 Multi-display is set, the screen of this product may not operate normally.
- \*6 The size of the text or other items on the screen is not changed to the specified value (96 DPI, 100%, 9 pt, etc.), the screen of this product may not operate normally.
- \*7 Changed the resolution of the screen during operating, the screen of this product may not operate normally.
- \*8 Please use by "Standard User," "Administrator" in Windows Vista® or later.
- \*9 Using a PC for setting Windows®10, upgrade to version 1.52E or later.  
Using a PC for setting Windows®8.1, upgrade to version 1.25B or later.  
Using a PC for setting Windows®8, upgrade to version 1.20W or later.  
Refer to Mitsubishi Electric Corporation's website for version upgrade information.
- \*10 If .NET Framework 3.5 (including .NET 2.0 and 3.0) have been disabled in Windows®7 or later, it is necessary to enable it.
- \*11 Order a USB cable separately.
  - This cable is compatible with the setup software (MR Configurator2™: LEC-MR-SETUP221□).

### Setup Software Compatible Drivers

Compatible driver	Setup software	
	MR Configurator2™	MR Configurator2™
	LEC-MR-SETUP221□	LEC-MRC2□
<b>LECSA</b>	○	○
<b>LECSB2-T□</b>	—	○
<b>LECSC2-T□</b>	—	○
<b>LECSS2-T□</b>	—	○

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product  
Precautions

# LECSA/LECS□-T Series

## Options

**USB cable (3 m)**  
(LECSA, LECSB-T, LECSA-T, LECSA-T common)

### LEC-MR-J3USB

\* MR-J3USBCBL3M manufactured by Mitsubishi Electric Corporation  
Weight: 140 g

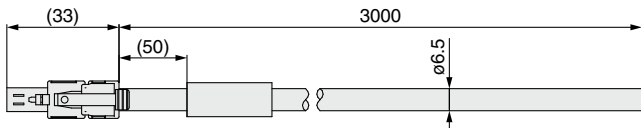
Cable for connecting the PC and driver when using the setup software (MR Configurator2™)  
Do not use any cable other than this cable.

**STO cable (3 m)**  
(Only for LECSB2-T□ and LECSA2-T□)

### LEC-MR-D05UDL3M

\* MR-D05UDL3M-B manufactured by Mitsubishi Electric Corporation

Cable for connecting the driver and device, when using the safety function  
Do not use any cable other than this cable.



Weight: 500 g

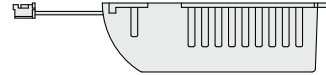
## Battery

### LEC-MR-J3BAT

\* MR-J3BAT manufactured by Mitsubishi Electric Corporation

Battery for replacement

Absolute position data is maintained by installing the battery to the driver.



Weight: 30 g

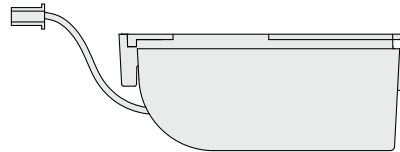
\* The LEC-MR-J3BAT is a single battery that uses a lithium metal battery ER6V. When transporting lithium metal batteries and devices with built-in lithium metal batteries by a method subject to UN regulations, it is necessary to apply measures according to the regulations stipulated in the United Nations Recommendations on the Transport of Dangerous Goods, the Technical Instructions (ICAO-TI) of the International Civil Aviation Organization (ICAO), and the International Maritime Dangerous Goods Code (IMDG CODE) of the International Maritime Organization (IMO). If a customer is to transport such products, it is necessary for them to confirm the latest regulations, or the laws and regulations of the country of transport, on their own in order to apply the proper measures. Please contact your local SMC sales representative for further details.

### LEC-MR-BAT6V1SET

\* MR-BAT6V1SET manufactured by Mitsubishi Electric Corporation

Battery for replacement

Absolute position data is maintained by installing the battery to the driver.



Weight: 60 g

\* The LEC-MR-BAT6V1SET is an assembled battery that uses a lithium metal battery 2CR17335A. When transporting lithium metal batteries and devices with built-in lithium metal batteries by a method subject to UN regulations, it is necessary to apply measures according to the regulations stipulated in the United Nations Recommendations on the Transport of Dangerous Goods, the Technical Instructions (ICAO-TI) of the International Civil Aviation Organization (ICAO), and the International Maritime Dangerous Goods Code (IMDG CODE) of the International Maritime Organization (IMO). If a customer is to transport such products, it is necessary for them to confirm the latest regulations, or the laws and regulations of the country of transport, on their own in order to apply the proper measures. Please contact your local SMC sales representative for further details.

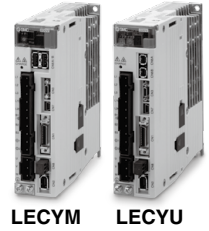
## Battery Types and Compatible Drivers

Compatible driver	Battery type	
	LEC-MR-J3BAT	LEC-MR-BAT6V1SET
LECSB□-T□	—	○
LECSA□-T□	○	—
LECSA□-T□	—	○

# AC Servo Motor Driver Absolute Type

## LECYM/LECYU Series

(MECHATROLINK-II Type) (MECHATROLINK-III Type)



\* For details, refer to page 128.

### How to Order

Driver

LECY **M** **2** -

Driver type

<b>M</b>	MECHATROLINK-II type (For absolute encoder)
<b>U</b>	MECHATROLINK-III type (For absolute encoder)

Power supply voltage

<b>2</b>	200 to 230 VAC, 50/60 Hz
----------	--------------------------

Compatible motor type

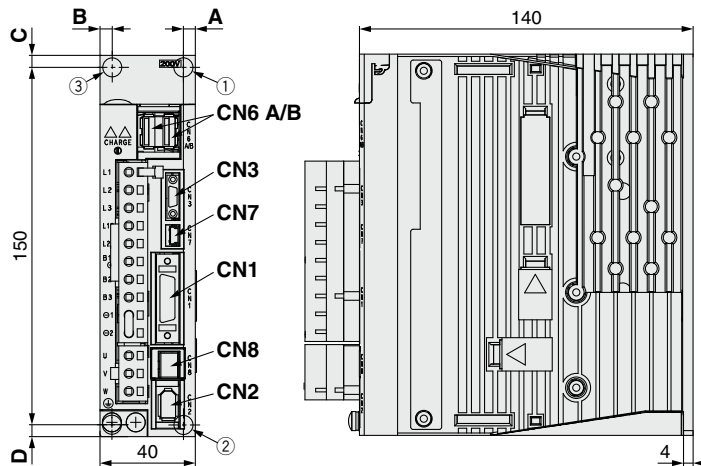
Symbol	Type	Capacity	Encoder
<b>V5</b>	AC servo motor (V6*1)	100 W	Absolute
<b>V7</b>	AC servo motor (V7*1)	200 W	

\*1 The symbol shows the motor type (actuator).

- \* If an I/O connector (CN1) is required, order the part number "LE-CYNA" separately.
- \* If an I/O cable (CN1) is required, order the part number "LEC-CSNA-1" separately.

### Dimensions

MECHATROLINK-II type  
LECYM2-V□



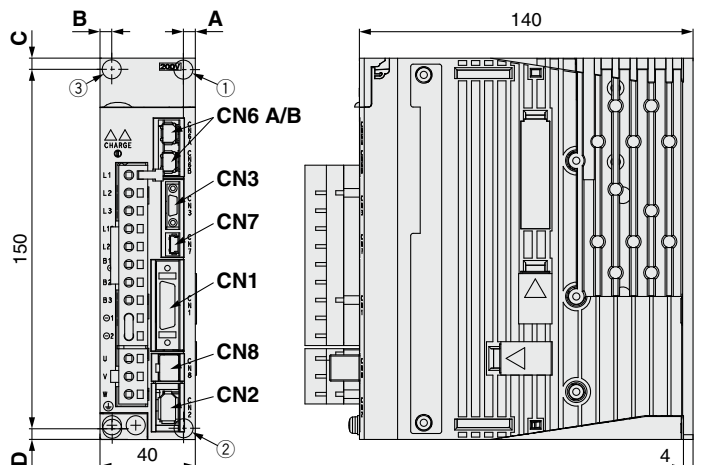
Connector name	Description
<b>CN1</b>	I/O signal connector
<b>CN2</b>	Encoder connector
<b>CN3*1</b>	Digital operator connector
<b>CN6A</b>	MECHATROLINK-II communication connector
<b>CN6B</b>	MECHATROLINK-II communication connector
<b>CN7</b>	PC connector
<b>CN8</b>	Safety connector

\*1 Digital operator is JUSP-OP05A-1-E manufactured by YASKAWA Electric Corporation. When using the digital operator, it should be provided by the customer.

Motor capacity	Hole position	Mounting dimensions				Mounting hole
		A	B	C	D	
<b>V5 (100 W)</b>	①②	5	—	5	5	ø5
<b>V7 (200 W)</b>	①②	5	—	5	5	ø5

\* The mounting hole position varies depending on the motor capacity.

MECHATROLINK-III type  
LECYU2-V□



Connector name	Description
<b>CN1</b>	I/O signal connector
<b>CN2</b>	Encoder connector
<b>CN3*1</b>	Digital operator connector
<b>CN6A</b>	MECHATROLINK-III communication connector
<b>CN6B</b>	MECHATROLINK-III communication connector
<b>CN7</b>	PC connector
<b>CN8</b>	Safety connector

\*1 Digital operator is JUSP-OP05A-1-E manufactured by YASKAWA Electric Corporation. When using the digital operator, it should be provided by the customer.

Motor capacity	Hole position	Mounting dimensions				Mounting hole
		A	B	C	D	
<b>V5 (100 W)</b>	①②	5	—	5	5	ø5
<b>V7 (200 W)</b>	①②	5	—	5	5	ø5

\* The mounting hole position varies depending on the motor capacity.

## Specifications

### MECHATROLINK-II Type

Model			LECYM2-V5	LECYM2-V7
Compatible motor capacity [W]			100	200
Compatible encoder			Absolute 20-bit encoder (Resolution: 1048576 p/rev)	
Main circuit power supply	Power voltage [V]		Three phase 200 to 230 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]		Three phase 170 to 253 VAC	
Control power supply	Power voltage [V]		Single phase 200 to 230 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]		Single phase 170 to 253 VAC	
Power supply capacity (at rated output) [A]			0.91	1.6
Input circuit			NPN (Sink circuit)/PNP (Source circuit)	
Parallel input (7 inputs)	Number of optional allocations	7 inputs	[Initial allocation] · Homing deceleration switch (/DEC) · External latch (/EXT 1 to 3) · Forward run prohibited (P-OT), reverse run prohibited (N-OT) [Can be allocated by setting the parameters] · Forward external torque limit (/P-CL), reverse external torque limit (/N-CL) Signal allocations can be performed, and positive and negative logic can be changed.	
			Number of fixed allocations	1 output
Parallel output (4 outputs)	Number of optional allocations	3 outputs	[Initial allocation] · Lock (/BK) [Can be allocated by setting the parameters] · Positioning completion (/COIN) · Speed limit detection (/VLT) · Speed coincidence detection (/V-CMP) · Rotation detection (/TGON) · Warning (/WARN) · Servo ready (/S-RDY) · Near (/NEAR) · Torque limit detection (/CLT) Signal allocations can be performed, and positive and negative logic can be changed.	
			MECHATROLINK communication	
Command method	Control method		Position, speed, or torque control with MECHATROLINK-II communication	
	Command input		MECHATROLINK-II command (Motion, data setting, monitoring, or adjustment)	
Function	Gain adjustment		Tuning-less/Advanced auto tuning/One-parameter tuning	
	Communication setting		USB communication, RS-422 communication	
	Torque limit		Internal torque limit, external torque limit, and torque limit by analog command	
	Encoder output		Phase A, B, Z: Line driver output	
	Emergency stop		CN8 Safety function	
	Overtravel		Dynamic brake stop, deceleration to a stop, or free run to a stop at P-OT or N-OT	
Alarm		Alarm signal, MECHATROLINK-II command		
Operating temperature range [°C]			0 to 55 (No freezing)	
Operating humidity range [%RH]			90 or less (No condensation)	
Storage temperature range [°C]			-20 to 85 (No freezing)	
Storage humidity range [%RH]			90 or less (No condensation)	
Insulation resistance [MΩ]			10 MΩ (500 VDC)	
Safety function			STO (IEC 61800-5-2)	
Safety standards*1			EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL2, IEC 62061 SIL CL2, IEC 61800-5-2	
Weight [g]			900	

\*1 Refer to the LECYM operation manual for details.

## Specifications

### MECHATROLINK-III Type

Model		LECYU2-V5	LECYU2-V7
Compatible motor capacity [W]		100	200
Compatible encoder		Absolute 20-bit encoder (Resolution: 1048576 p/rev)	
Main circuit power supply	Power voltage [V]	Three phase 200 to 230 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Three phase 170 to 253 VAC	
Control power supply	Power voltage [V]	Single phase 200 to 230 VAC (50/60 Hz)	
	Allowable voltage fluctuation [V]	Single phase 170 to 253 VAC	
Power supply capacity (at rated output) [A]		0.91	1.6
Input circuit		NPN (Sink circuit)/PNP (Source circuit)	
Parallel input (7 inputs)	Number of optional allocations	7 inputs	[Initial allocation] <ul style="list-style-type: none"> <li>· Homing deceleration switch (/DEC)</li> <li>· External latch (/EXT 1 to 3)</li> <li>· Forward run prohibited (P-OT), reverse run prohibited (N-OT)</li> </ul> [Can be allocated by setting the parameters] <ul style="list-style-type: none"> <li>· Forward external torque limit (/P-CL), reverse external torque limit (/N-CL)</li> </ul> Signal allocations can be performed, and positive and negative logic can be changed.
			Number of fixed allocations
Parallel output (4 outputs)	Number of optional allocations	3 outputs	[Initial allocation] <ul style="list-style-type: none"> <li>· Lock (/BK)</li> </ul> [Can be allocated by setting the parameters] <ul style="list-style-type: none"> <li>· Positioning completion (/COIN)</li> <li>· Speed limit detection (/VLT)</li> <li>· Speed coincidence detection (/V-CMP)</li> <li>· Rotation detection (/TGON)</li> <li>· Warning (/WARN)</li> <li>· Servo ready (/S-RDY)</li> <li>· Near (/NEAR)</li> <li>· Torque limit detection (/CLT)</li> </ul> Signal allocations can be performed, and positive and negative logic can be changed.
MECHATROLINK communication	Communication protocol	MECHATROLINK-III	
	Station address	03H to EFH	
	Transmission speed	100 Mbps	
	Transmission cycle	125 μs, 250 μs, 500 μs, 750 μs, 1 ms to 4 ms (Multiples of 0.5 ms)	
	Number of transmission bytes	16 bytes, 32 bytes, 48 bytes	
	Max. number of stations	62	
	Cable length	Cable length between the stations: 0.5 m or more, 75 m or less	
Command method	Control method	Position, speed, or torque control with MECHATROLINK-III communication	
	Command input	MECHATROLINK-III command (Motion, data setting, monitoring, or adjustment)	
Function	Gain adjustment	Tuning-less/Advanced auto tuning/One-parameter tuning	
	Communication setting	USB communication, RS-422 communication	
	Torque limit	Internal torque limit, external torque limit, and torque limit by analog command	
	Encoder output	Phase A, B, Z: Line driver output	
	Emergency stop	CN8 Safety function	
	Overtravel	Dynamic brake stop, deceleration to a stop, or free run to a stop at P-OT or N-OT	
Alarm	Alarm signal, MECHATROLINK-III command		
Operating temperature range [°C]		0 to 55 (No freezing)	
Operating humidity range [%RH]		90 or less (No condensation)	
Storage temperature range [°C]		-20 to 85 (No freezing)	
Storage humidity range [%RH]		90 or less (No condensation)	
Insulation resistance [MΩ]		10 MΩ (500 VDC)	
Safety function		STO (IEC 61800-5-2)	
Safety standards*1		EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL2, IEC 62061 SIL CL2, IEC 61800-5-2	
Weight [g]		900	

\*1 Refer to the LECYU operation manual for details.

Model Selection

Battery-less Absolute LEKFS

AC Servo Motor LEKFS

Auto Switch

JXC51/61

JXC

LECSA  
LECS□-T

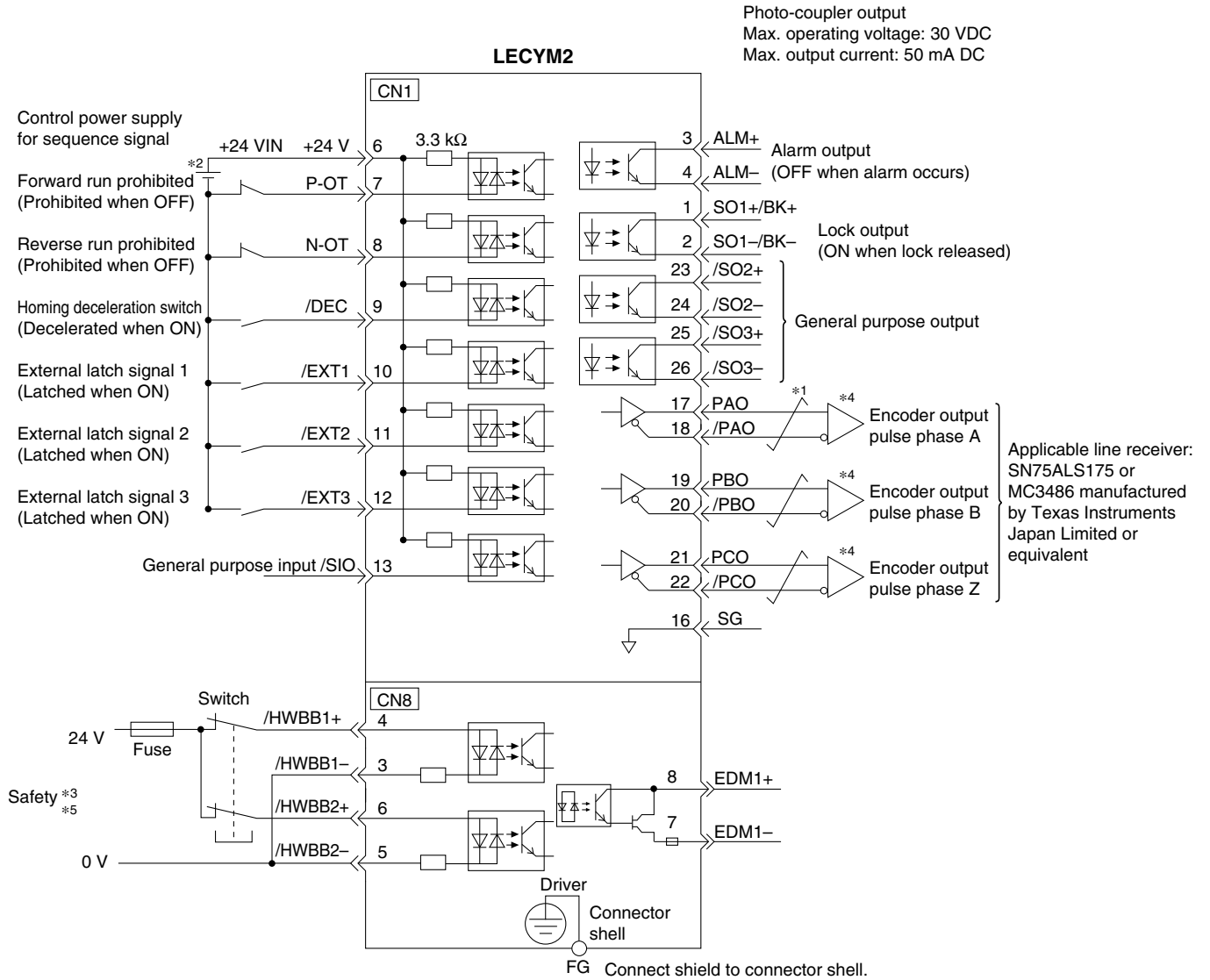
LECYM  
LECYU

Specific Product Precautions





**Control Signal Wiring Example: LECYM**



- \*1  $\overline{\text{---}}$  shows twisted-pair wires.
- \*2 The 24 VDC power supply is not included. Use a 24 VDC power supply with double insulation or reinforced insulation.
- \*3 When using the safety function, a safety function device must be connected to the wiring that is necessary to activate the safety function. Otherwise, the servo motor is not turned ON. When not using the safety function, use the driver with the Safety Jumper Connector (provided as an accessory) inserted into the CN8.
- \*4 Always use line receivers to receive the output signals.  
\*\* The functions allocated to the input signals /DEC, P-OT, N-OT, /EXT1, /EXT2, and /EXT3, and the output signals /SO1, /SO2, and /SO3 can be changed by setting the parameters.
- \*5 It is a safety function equivalent to the STO function (IEC 61800-5-2) using the hard wire base block function (HWBB).

Model Selection

Battery-less Absolute  
**LEKFS**

AC Servo Motor  
**LEKFS**

Auto Switch

JXC51/61

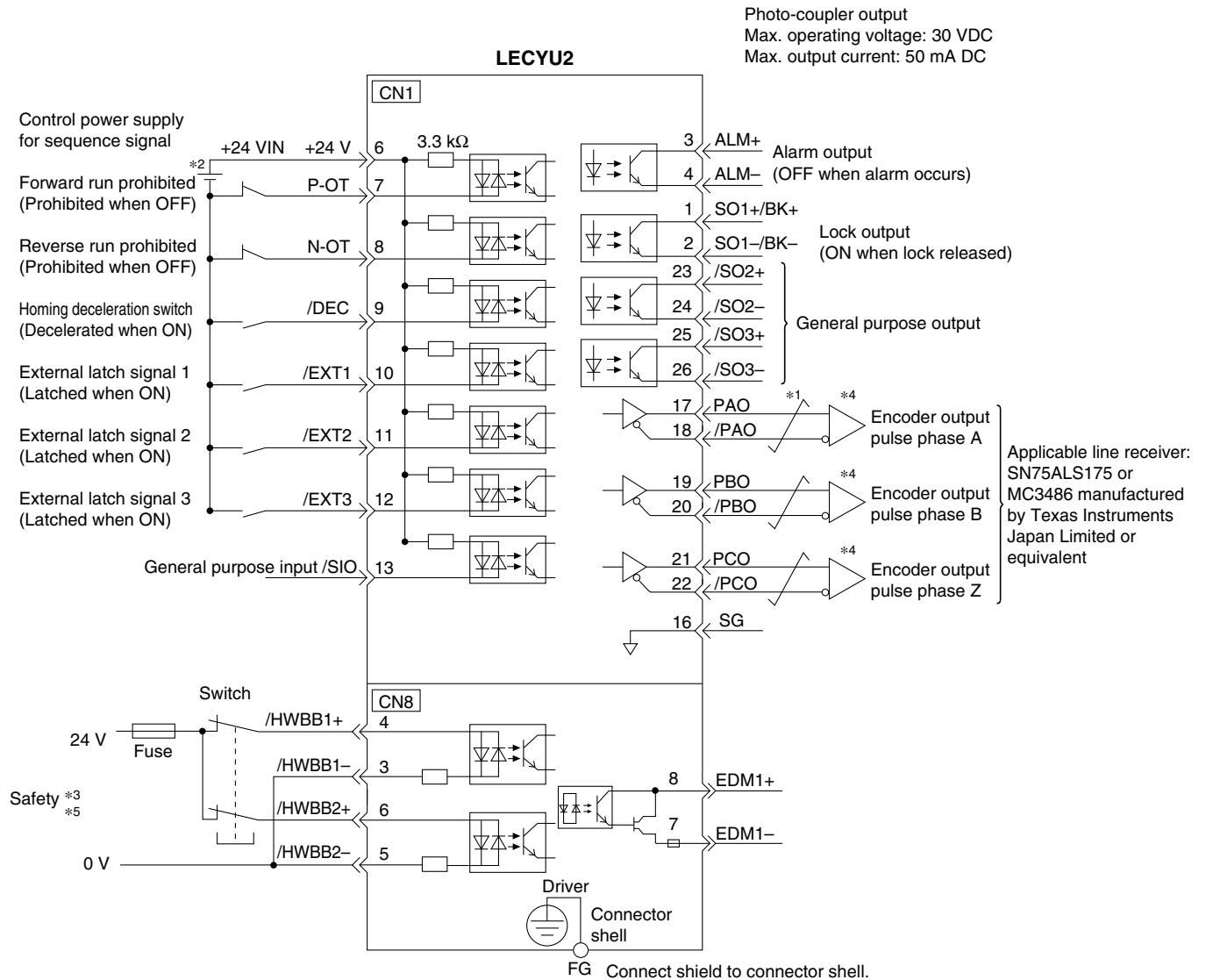
JXC

LECSA  
LECS-T

LECYM  
LECYU

Specific Product  
Precautions

## Control Signal Wiring Example: LECYU



\*1  $\overline{\text{---}}$  shows twisted-pair wires.

\*2 The 24 VDC power supply is not included. Use a 24 VDC power supply with double insulation or reinforced insulation.

\*3 When using the safety function, a safety function device must be connected to the wiring that is necessary to activate the safety function. Otherwise, the servo motor is not turned ON. When not using the safety function, use the driver with the Safety Jumper Connector (provided as an accessory) inserted into the CN8.

\*4 Always use line receivers to receive the output signals.

\*\* The functions allocated to the input signals /DEC, P-OT, N-OT, /EXT1, /EXT2, and /EXT3, and the output signals /SO1, /SO2, and /SO3 can be changed by setting the parameters.

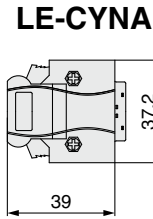
\*5 It is a safety function equivalent to the STO function (IEC 61800-5-2) using the hard wire base block function (HWBB).



# LECY<sup>M</sup><sub>U</sub> Series

## Options

### I/O connector (Without cable, Connector only)

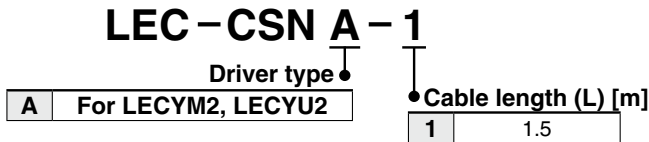


#### Weight

Product no.	Weight [g]
<b>LE-CYNA</b>	25

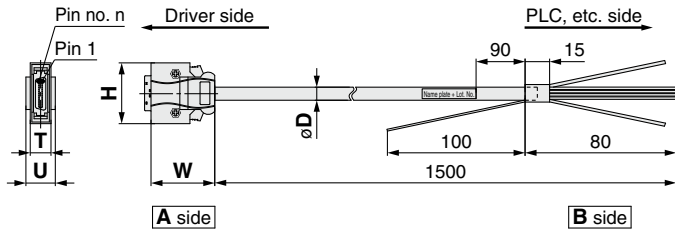
- \* LE-CYNA: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
- \* Conductor size: AWG24 to 30

### I/O cable



#### Weight

Product no.	Weight [g]
<b>LEC-CSNA-1</b>	303



- \* LEC-CSNA-1: 10126-3000PE (connector)/10326-52F0-008 (shell kit) manufactured by 3M Japan Limited or equivalent
- \* Conductor size: AWG24

### Wiring

LEC-CSNA-1: Pin nos. 1 to 26

Connector pin no.	Pair no. of wire	Insulation color	Dot mark	Dot color	Connector pin no.	Pair no. of wire	Insulation color	Dot mark	Dot color	Connector pin no.	Pair no. of wire	Insulation color	Dot mark	Dot color		
<b>A side</b>	1	Orange	■	Red	<b>A side</b>	11	Orange	■ ■	Red	<b>A side</b>	21	Orange	■ ■ ■ ■	Red		
	2		■	Black		12		■ ■	Black		22		■ ■ ■ ■	Black		
	3	Light gray	■	Red		13	Light gray	■ ■	Red		23	Light gray	12	Light gray	■ ■ ■ ■	Red
	4		■	Black		14		■ ■	Black		24				■ ■ ■ ■	Black
	5	White	■	Red		15	White	■ ■	Red		25	White	13	White	■ ■ ■ ■	Red
	6		■	Black		16		■ ■	Black		26				■ ■ ■ ■	Black
	7	Yellow	■	Red		17	Yellow	■ ■	Red							
	8		■	Black		18		■ ■	Black							
	9	Pink	■	Red		19	Pink	■ ■	Red							
	10		■	Black		20		■ ■	Black							

#### Cable O.D.

Product no.	øD
<b>LEC-CSNA-1</b>	11.1

#### Dimensions/Pin No.

Product no.	W	H	T	U	Pin no. n
<b>LEC-CSNA-1</b>	39	37.2	12.7	14	14

**Options**

**MECHATROLINK cable type**

**LEC-CY M - 1**

Motor type

Y AC servo motor

Cable description

M MECHATROLINK-II cable  
U MECHATROLINK-III cable

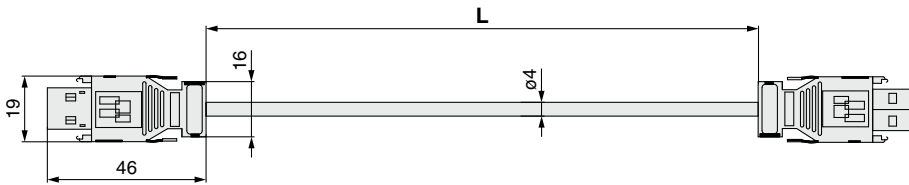
Cable length (L)

L*1	0.2 m
J	0.5 m
1	1 m
3	3 m

\*1 Not available for the MECHATROLINK-II cable

\* LEC-CYM-□ is JEPMC-W6002-□□-E manufactured by YASKAWA CONTROLS CO., LTD.  
\* LEC-CYU-□ is JEPMC-W6012-□□-E manufactured by YASKAWA CONTROLS CO., LTD.

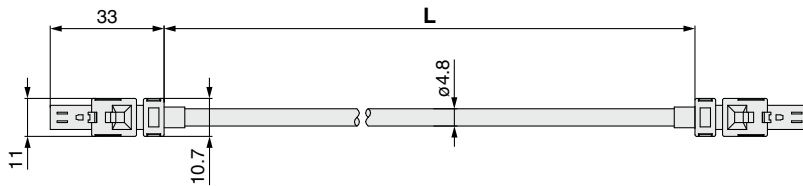
**MECHATROLINK-II cable**



**Weight**

Product no.	Length [m]	Weight [g]
LEC-CYM-J	0.5	50
LEC-CYM-1	1	80
LEC-CYM-3	3	200

**MECHATROLINK-III cable**



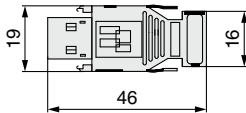
**Weight**

Product no.	Length [m]	Weight [g]
LEC-CYU-L	0.2	21
LEC-CYU-J	0.5	41
LEC-CYU-1	1	75
LEC-CYU-3	3	205

**Terminating connector for MECHATROLINK-II**

**LEC-CYRM**

\* LEC-CYRM is JEPMC-W6022-E manufactured by YASKAWA CONTROLS CO., LTD.



Weight: 10 g

Model Selection

Battery-less Absolute

LEKFS

AC Servo Motor

LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product  
Precautions

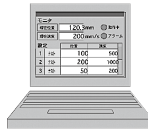
## Options



LECYM2 LECYU2  
Drivers



USB cable



PC

### Setup software (SigmaWin+™) (LECYM/LECYU common)

\* Please download the SigmaWin+™ via our website.  
SigmaWin+™ is a registered trademark or trademark of YASKAWA Electric Corporation.

**Adjustment, waveform display, parameter reading/writing, and test operations can be performed on a PC.**

### Compatible PCs

When using the setup software (SigmaWin+™), use an IBM PC/AT compatible PC that meets the following operating conditions.

### Hardware Requirements

Equipment		Setup software (SigmaWin+™) Ver. 5	Setup software (SigmaWin+™) Ver. 7
*1, 2, 3, 4 PC	OS	Windows® XP*5, Windows Vista®, Windows® 7 (32-bit/64-bit)	Compatible with 64-bit OS · Windows 11, Windows 10, Windows 8.1*7, Windows 7 SP1*8 Compatible with 32-bit OS · Windows 10, Windows 8.1*7, Windows 7 SP1*8
	Available HD space	350 MB or more (When the software is installed, 400 MB or more is recommended.)	500 MB or more
	Communication interface	Uses the USB port	
Display	XVGA monitor (1024 x 768 or more, used with small font) 256 color or more (65536 color or more is recommended) Connectable with the PCs listed above	Resolution: 1280 x 800 or more (Recommended) Connectable with the PCs listed above	
Keyboard	Connectable with the PCs listed above		
Mouse	Connectable with the PCs listed above		
Printer	Connectable with the PCs listed above		
USB cable	LEC-JZ-CVUSB*6		
Other	Adobe Reader Ver. 5.0 or higher (* Excludes Ver. 6.0)		—

- \*1 Windows, Windows Vista®, Windows® 7, Windows® 8.1, Windows® 10, and Windows® 11 are registered trademarks of Microsoft Corporation in the United States and/or other countries.
- \*2 On some PCs, this software may not run properly.
- \*3 Not compatible with 64-bit Windows® XP and 64-bit Windows Vista®
- \*4 For Windows® XP, install and run the software as an administrator.
- \*5 For PCs that have HotfixQ328310 installed, installation of the software is likely to fail. In such cases, install HotfixQ329623 instead.
- \*6 Order a USB cable separately.
- \*7 WindowsUpdate KB2919442, KB2919355, and KB2999226 are required.
- \*8 WindowsUpdate KB2999226 is required.

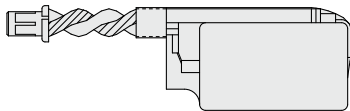
### Battery (LECYM/LECYU common)

#### LEC-JZ-CVBAT

\* JZSP-BA01 manufactured by YASKAWA CONTROLS CO., LTD.

Battery for replacement

Absolute position data is maintained by installing the battery to the battery case of the encoder cable.



Weight: 10 g

\* The LEC-JZ-CVBAT is a single battery that uses a lithium metal battery ER3V.

When transporting lithium metal batteries and devices with built-in lithium metal batteries by a method subject to UN regulations, it is necessary to apply measures according to the regulations stipulated in the United Nations Recommendations on the Transport of Dangerous Goods, the Technical Instructions (ICAO-TI) of the International Civil Aviation Organization (ICAO), and the International Maritime Dangerous Goods Code (IMDG CODE) of the International Maritime Organization (IMO). If a customer is to transport such products, it is necessary for them to confirm the latest regulations, or the laws and regulations of the country of transport, on their own in order to apply the proper measures. Please contact your local SMC sales representative for further details.

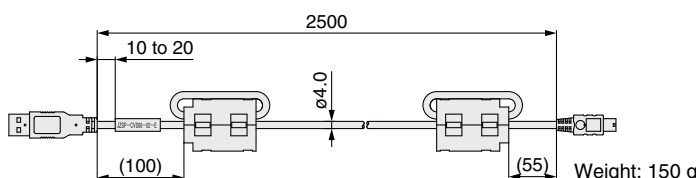
### USB cable (2.5 m)

#### LEC-JZ-CVUSB

\* JZSP-CVS06-02-E manufactured by YASKAWA CONTROLS CO., LTD.

Cable for connecting the PC and driver when using the setup software (SigmaWin+™)

Do not use any cable other than this cable.



Weight: 150 g

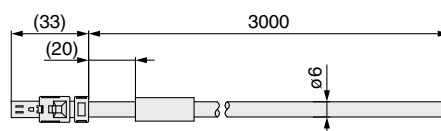
### Cable for safety function device (3 m)

#### LEC-JZ-CVSAF

\* JZSP-CVH03-03-E manufactured by YASKAWA CONTROLS CO., LTD.

Cable for connecting the driver and device when using the safety function

Do not use any cable other than this cable.



Weight: 160 g



# LECSA/LECS□-T/LECY□ Series Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

## Design / Selection

### Warning

- 1. Be sure to apply the specified voltage.**  
Otherwise, malfunction or breakage may occur. If the applied voltage is lower than the specified voltage, it is possible that the load will not be able to be moved due to an internal voltage drop of the driver. Please check the operating voltage before use.
- 2. Do not operate the product beyond the specifications.**  
Otherwise, a fire, malfunction, or actuator damage may result. Please check the specifications before use.
- 3. Install an emergency stop circuit.**  
Please install an emergency stop outside of the enclosure so that the system operation can be stopped immediately and the power supply can be intercepted.
- 4. In order to prevent any damage caused by the breakdown or malfunction of the driver and its peripheral devices, a backup system should be established in advance by giving a multiple-layered structure or a fail-safe design to the equipment, etc.**
- 5. If the danger of human injury is expected due to abnormal heat generation, smoking, ignition, etc., of the driver and its peripheral devices, cut off the power supply of the product and the system immediately.**
- 6. The parameters of the driver are set to initial values. Please change the parameters according to the specifications of the customer's equipment before use. Refer to the operation manual for parameter details.**

## Handling

### Warning

- 1. Do not touch the inside of the driver and its peripheral devices.**  
Doing so may cause an electric shock or damage to the driver.
- 2. Do not perform the operation or setting of the product with wet hands.**  
Doing so may cause an electric shock.
- 3. Products with damage or those missing any components should not be used.**  
An electric shock, fire, or injury may result.
- 4. Use only the specified combination between the electric actuator and the driver.**  
Failure to do so may cause damage to the actuator or the driver.
- 5. Be careful not to be hit by workpieces while the actuator is moving.**  
It may cause an injury.
- 6. Do not connect the power supply or power on the product before confirming the area to which the workpiece moves is safe.**  
The movement of the workpiece may cause an accident.
- 7. Do not touch the product when it is energized and for some time after the power has been disconnected, as it is very hot.**  
Doing so may lead to a burn due to the high temperature.
- 8. Before installation, wiring, and maintenance, the voltage should be checked with a tester 5 minutes after the power supply has been turned off.**  
Otherwise, an electric shock, fire, or injury may result.

## Handling

### Warning

- 9. Static electricity may cause a malfunction or break the driver. Do not touch the driver while power is supplied.**  
When touching the driver for maintenance, take sufficient measures to eliminate static electricity.
- 10. Do not use the product in an area where dust, powder dust, water, chemicals, or oil is in the air.**  
It will cause failure or malfunction.
- 11. Do not use the product in an area where a magnetic field is generated.**  
It will cause failure or malfunction.
- 12. Do not install the product in an environment containing flammable gas, explosive gas, or corrosive gas.**  
It could lead to fire, explosion, or corrosion.
- 13. Radiant heat from strong heat sources, such as a furnace, direct sunlight, etc., should not be applied to the product.**  
It will cause failure of the driver or its peripheral devices.
- 14. Do not use the product in an environment subject to a temperature cycle.**  
It will cause failure of the driver or its peripheral devices.
- 15. Do not use the product in a place where surges are generated.**  
When there are units that generate a large amount of surge around the product (e.g. solenoid type lifters, high-frequency induction furnaces, motors, etc.), this may cause deterioration or damage to the product's internal circuit. Avoid sources of surge generation and crossed lines.
- 16. Do not install the product in an environment under the effect of vibrations and impacts.**  
It will cause failure or malfunction.
- 17. When a surge-generating load, such as a relay or solenoid valve, is driven directly, use a product that incorporates a surge absorption element.**

## Installation

### Warning

- 1. Install the driver and its peripheral devices on a fire-proof material.**  
Direct installation on or near a flammable material may cause a fire.
- 2. Do not install the product in a place subject to vibrations and impacts.**  
It will cause failure or malfunction.
- 3. The driver should be mounted on a vertical wall in a vertical direction. Also, be sure not to cover the driver's suction/exhaust ports.**
- 4. Install the driver and its peripheral devices on a flat surface.**  
If the mounting surface is distorted or uneven, an unacceptable force may be added to the housing, etc., causing problems.

Model Selection

Battery-less Absolute  
LEKFS

AC Servo Motor  
LEKFS

Auto Switch

JXC51/61

JXC□

LECSA  
LECS□-T

LECYM  
LECYU

Specific Product  
Precautions



# LECSA/LECS□-T/LECY□ Series Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For electric actuator and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

## Power Supply

### ⚠ Caution

1. Use a power supply that has low noise between lines and between the power and ground.  
In cases where noise is high, an isolation transformer should be used.
2. To prevent lightning surges, appropriate measures should be taken. Ground the surge absorber for lightning separately from the grounding of the driver and its peripheral devices.

## Wiring

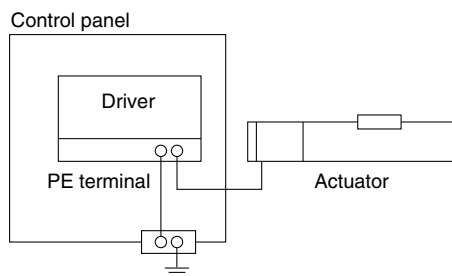
### ⚠ Warning

1. The driver will be damaged if a commercial power supply (100/200 V) is added to the driver's servo motor power (U, V, and W). Be sure to check wiring for mistakes when the power supply is turned on.
2. Connect the ends of the U, V, and W wires of the motor cable correctly to the phases (U, V, and W) of the servo motor power. If these wires do not match up, the servo motor cannot be controlled.

## Grounding

### ⚠ Warning

1. For grounding the actuator, connect the copper wire of the actuator to the driver's protective earth (PE) terminal and connect the copper wire of the driver to the earth via the control panel's protective earth (PE) terminal. Do not connect them directly to the control panel's protective earth (PE) terminal.



2. In the unlikely event that a malfunction is caused by the ground, please disconnect it.

## Maintenance

### ⚠ Warning

1. Perform a maintenance and inspection periodically.  
Confirm wiring and screws are not loose.  
Loose screws or wires may cause unintentional malfunction.
2. Conduct an appropriate functional inspection after completing the maintenance and inspection.  
At times where the equipment or machinery does not operate properly, conduct an emergency stop of the system. Otherwise, an unexpected malfunction may occur and it will become impossible to ensure safety. Conduct a test of the emergency stop in order to confirm the safety of the equipment.
3. Do not disassemble, modify, or repair the driver and its peripheral devices.
4. Do not put anything conductive or flammable inside the driver.  
It may cause a fire.
5. Do not conduct an insulation resistance test or withstand voltage test on this product.
6. Ensure sufficient space for maintenance activities.  
Design the system allowing the required space for maintenance and inspection.



# CE/UKCA/UL-compliance List

\* For CE, UKCA, and UL-compliant products, refer to the tables below.

As of February 2022

## ■ Controllers “○”: Compliant “×”: Not compliant

Compatible motor	Series	CE UK CA	cRU <sup>us</sup>	
			Compliance	Certification No. (File No.)
Battery-less absolute (Step motor 24 VDC)	JXC51/61	○	○	E480340
	JXCE1	○	○	E480340
	JXC91	○	○	E480340
	JXCP1	○	○	E480340
	JXCD1	○	○	E480340
	JXCL1	○	○	E480340
	JXCM1	○	○	E480340

Compatible motor	Series	CE UK CA	c(UL) <sup>us</sup> LISTED	
			Compliance	Certification No. (File No.)
AC servo motor	LECSA	○	○	E466261
	LECSB-T	○	○	E466261
	LECS-C-T	○	○	E466261
	LECSS-T	○	○	E466261
	LECYM	○	×	—
	LECYU	○	×	—

## ■ Actuators “○”: Compliant

Compatible motor	Series	CE UK CA	cRU <sup>us</sup>	
			Compliance	Certification No. (File No.)
Battery-less absolute (Step motor 24 VDC)	LEKFS	○	N/A	—
AC servo motor	LEKFS	○	N/A	—

\* If the actuator is ordered separately, it does not comply with UL standards.

## ■ Actuators (When ordered with a controller) “○”: Compliant

Compatible motor	Series	JXC51/61			JXCE1			JXC91			JXCP1		
		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>	
Battery-less absolute (Step motor 24 VDC)	LEKFS	○	N/A	—	○	N/A	—	○	N/A	—	○	N/A	—
Compatible motor	Series	JXCD1			JXCL1			JXCM1					
		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>				
Battery-less absolute (Step motor 24 VDC)	LEKFS	○	N/A	—	○	N/A	—	○	N/A	—			


## ■ Actuators (When ordered with a controller) “○”: Compliant “—”: Not applicable


Compatible motor	Series	LECSA*1			LECSB-T*1			LECS-C-T*1		
		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>	
AC servo motor	LEKFS	○	N/A	—	○	N/A	—	○	N/A	—
Compatible motor	Series	LECSS-T*1			LECYM-V			LECYU-V		
		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>		CE UK CA	cRU <sup>us</sup>	
AC servo motor	LEKFS	○	N/A	—	○	N/A	—	○	N/A	—


\*1 There is a “UL Listed” mark on the AC servo motor driver body.

## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

 **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

 **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

\*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.  
ISO 4413: Hydraulic fluid power – General rules relating to systems.  
IEC 60204-1: Safety of machinery – Electrical equipment of machines.  
(Part 1: General requirements)  
ISO 10218-1: Manipulating industrial robots – Safety.  
etc.

### Warning

#### 1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

#### 2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

#### 3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

#### 4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

### Caution

#### 1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.  
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.  
If anything is unclear, contact your nearest sales branch.

### Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

#### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)  
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.  
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

##### \*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.  
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

#### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.


### Caution

#### SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

#### Revision History

Edition	Content	Page
B	* Size 16 has been added to the battery-less absolute type (step motor 24 VDC). * An AC servo motor type has been added. * UKCA compliance has been added. * The JXC□ series controller with STO sub-function has been added. * The number of pages has been increased from 60 to 132.	AZ

 **Safety Instructions** Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.

## SMC Corporation

Akihabara UDX 15F,  
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN  
Phone: 03-5207-8249 Fax: 03-5298-5362  
<https://www.smcworld.com>  
© 2022 SMC Corporation All Rights Reserved

Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.